

US Army Corps of Engineers Fort Worth District

ENERGY STUDY (EEAP)

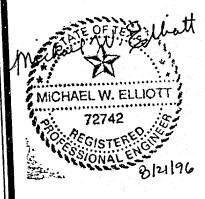
AT

HELSTF

WHITE SANDS MISSILE RANGE, NEW MEXICO

FINAL REPORT VOLUME II

CONDUCTED BY:



HUITT-ZOLLARS

512 MAIN STREET SUITE 1500 FORT WORTH, TEXAS 76102 (817) 335 - 3000 8/23/96

DTIC QUALITY INSPECTED 3

19971022 124

DISTRIBUTION STATEMENT A

Approved for public release; Distribution Unlimited

DEPARTMENT OF THE ARMY

CONSTRUCTION ENGINEERING RESEARCH LABORATORIES, CORPS OF ENGINEERS P.O. BOX 9005 CHAMPAIGN, ILLINOIS 61826-9005

REPLY-70 ATTENTION OF:

TR-I Library

17 Sep 1997

Based on SOW, these Energy Studies are unclassified/unlimited. Distribution A. Approved for public release.

Marie Wakeffeld, Librarian Engineering

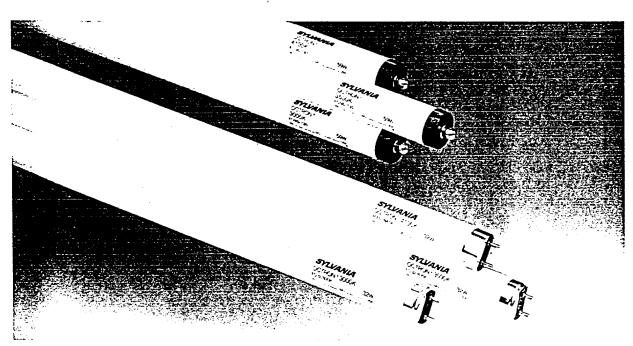
APPENDIX Ë SAMPLE PRODUCTS

TABLE OF CONTENTS

Fluorescent T8 Lamp Information
Fluorescent T8 Lamp Information Fluorescent Electronic Ballast Information Compact Fluorescent Lamp Information E. L. F. D. F. D. F. L. F. D. F. L. F. D.
Compact Fluorescent Lamp Information
LED Exit Sign Retrofit Kit Information
Occupancy Sensor Lighting Controls Inc. F-1
LSIC VAV Retrofit Terminal Information F.1
riigh Efficiency Motor Information F-1
LSTC Recip. Chiller Manufacturers Data
ESTC and TC-2 Screw Chiller Manufactures D. F-30
IC-2 Diesel Fired Boiler Manufacturers Data
STC Pump P-5 Manufacturers Data
STC Pump P-7A Manufacturers Deta
STC Pump P-7B Manufacturers Data F_43
STC Pump P-10A Manufacturers Deta F-45
STC Pump P-10B Manufacturers Data F-47
C-2 Pumps P-67 and P-68 Manufacturers Details F-49
STC Propane Fired Boiler Manufacturers Data
E-53

OCTRON*

Fluorescent Lamps



The Widest Range of T8 Lamps Available

Through its OCTRON[‡] line OSRAM SYLVANIA offers more T8 lamp options than any other manufacturer. This gives architects, lighting designers, engineers, contractors and other specifiers the opportunity to select exactly the right mix of lamps to meet the precise requirements of an application.

All OCTRON lamps have a 20,000 hour average rated life when operated on rapid start ballasts. Lamps are rated at 15,000 hours when operated on instant start ballasts. (These figures are based on three hours of operation per start. Ratings will improve as burningcycles increase. In a typical 10 hour per day application, for example, life ratings on rapid start or instant start ballasts are increased by 35 percent.) Because long life means less frequent lamp replacement and smaller lamp inventories, maintenance costs can be substantially reduced.

OCTRON® Bipin Linear Lamps

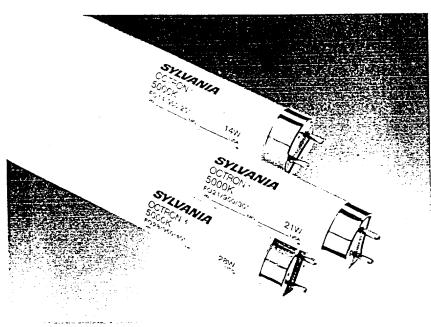
OCTRON bipin linear fluorescent lamps are available in four length/wattage combinations-2-foot (17W), 3-foot (25W), 4-foot (32W) and 5foot (40W). This means there is an OCTRON T8 lamp to replace any commonly available bipin T12 lamp in any standard linear fluorescent fixture. OCTRON 700 Series lamps are available in four color temperatures - 3000K. 3500K, 4100K and 5000Kand have a color rendering index of 75. The 800 Series lamps come in 3000K, 3500K and 4100K colors and have an exceptional CRI of 85.

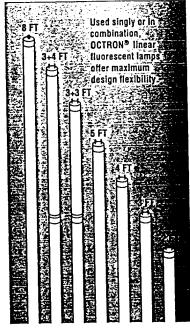
OCTRON® Single Pin Lamps

The OCTRON family includes an 8-foot single pin T8 lamp. When used in combination with an electronic ballast OCTRON FO96T8 lamps can replace F96T12 systemssaving over 90 watts per twolamp fixture. The 15,000 hour average rated life of this innovative lamp is 25 percent longer than ordinary F96T12 lamps. In addition, the argon fill gas in OCTRON FO96T8 lamps is less temperature sensitive than the krypton gas commonly used in F96T12/SS lamps. This improves light output in applications where cold air circulates. Available in 700 Series (75 CRI) and 800 Series (85 CRI) versions with a choice of 3000K. 3500K and 4100K colors

DTIC QUALITY INSPECTED 3

T8 Linear Fluorescent Lamps





OCTRON 900 Series lamps are the only T8 lamps available that are suitable for color critical applications

OCTRON® 900 Series Lamps

The OCTRON® 900 Series offers the industry's only full color spectrum T8 fluorescent lamps. These high performance lamps are designed for a wide variety of color critical applications. Their CRI of 90 is the highest of any fluorescent lamp and they feature a color temperature of 5000K. The American National Standards Institute has specified 5000K light sources for color evaluation

and comparisons, 5000K was chosen because it is the average color of daylight—an almost universal light source. OCTRON 900 Series lamps have a wide range of uses in graphic arts, textile and quality control applications where accurate color evaluation and comparisons are essential They are also ideal for backlighting displays and translucent signs. ÓCTRON 900 Series lamps are available in the standard 2-foot. 3-foot, 4-foot and 5-foot lamp lengths as well as special 20-nch, 30-inch and 40-inch versions. Wattages range from 14 to 40 watts. For increased flexibility, different sizes of OCTRON 900 Series lamps may be operated on a single multi-lamp instant. start electronic ballast with un form lamp life.

Understanding OCTRON® T8 Technology

OCTRON T5 lamps can be operated effectively on rapid start magnetic and rapid start electronic ballasts. However, specific elements of OCTRON T8 technology are designed to achieve maximum performance on high frequency, instant start electronic ballasts.

The primary benefit of running OCTRON T3 lamps on electronic ballasts is the ability to use less energy to produce a given amount of light. The energy savings come from the fact that an electronic ballast drives OCTRON T8 lamps at high frequency—20,000 Hz—compared to 60 Hz for

a standard magnetic ballast. The increased frequency improves light output by up to 12 percent, allowing OCTRON lamps to provide dramatic energy cost savings while producing the same output as fluorescent T12 lamps. For even more savings. OCTRON fluorescent lamps may be operated with as little as 140 milliamps of current on instant start electronic ballasts.

OCTRON' CURVALUME'

T8 Fluorescent Lamps

OCTRON® 700 Series Linear T8 Fluorescent Lamps

Watts	Bulb	Nominal Length (in.)	Base	Item Number	Ordering Abbreviation	Average Rated Life (hours)	Initial Lumens	Color Temp.	CRI
17	T-8	24	Medium Bioin	21849	F017/730	20000	1325	3000K	75
17	T-8	24	Medium Bigin	21832	F017/735	20000	1325	3000K	75
17	T-8	24	Medium Bipin	21831	F017/741	20000	1325	41C0K	75
25	T-8	36	Medium Bipin	21851	F025/730	20000	2125	3000K	75
25	T-8	36	Medium Bigin	21817	F025/735	20000	2125	3500K	75
25	T-8	: 36	Medium Bipin	21829	F025/741	20000	2125	4100K	75
32	T-8	48	Medium Bigin	21852	F032/730	20000	2850	3000K	75
32	T-8	48	Medium Bigin	21823	F032/735	20000	2850	350CK	75
32	T-8	48	Medium Bigin	21824	F032/741	200C0	2850	4100K	75
32	T-8	48	Medium Bipin	21809	F032/750	20000	2650	5000K	75
40	T-8	60	Medium Bigin	21853	F040/730	20000	3600	3000K	75
40	T-8	60	Medium Bigin	21820	F040/735	20000	3600	3500K	75
40	T-8	60	Medium Bigin	21827	FO40/741	20000	3600	4100K	75
59	T-8	96	Single P.n	21854	F096/730	15000	5700	3000K	75
59	T-8	96	Single Pin	21839	F096/735	15000	5700	3500K	75
59	T-8	96	Single Pin	21840	F096/741	15000	5700	4100K	75

OCTRON® 800 Series Linear T8 Fluorescent Lamps

Watts	Bulb	Nominal Length (in.)	Base	ltem Number	Ordering Abbreviation	Average Rated Life (hours)	Initial Lumens	Color	CRI
Service Service		congui (iii.)	Dasc	Muniper	MUDICALOU	Life (nours)	FOILIGH?	Temp.	Uni
17	T-8	24	Medium Bipin	21903	F017/830	20000	1400	3000K	85
17	T-8	24	Medium Bigin	21904	F017/835	20000	1400	3500K	85
17	T-8	24	Medium Bipin	21905	F017/841	20000	1400	4100K	85
25	T-8	36	Medium Bigin	21913	F025/830	20000	2225	3000K	85
25	T-8	36	Medium Bigin	21914	F025/835	20000	2225	3500k	85
25	T-8	36	Medium Bigin	21915	F025/841	20000	2225	4100K	85
32	T-8	48	Medium Bipin	21923	F032/830	20000	3000	3000K	85
32	T-8	48	Medium Bipin	21924	F032/835	20000	3000	3500K	85
32	7-3	48	Medium Bigin	21925	F032/841	20000	3000	4100K	85
36	T-8	48	Medium Bigin	21930	F036/830	20000	3450	3000K	85
36	T-8	48	Medium Bigin	21931	F036/835	20000	3450	3500K	85
36	T-8	48	Medium Bigin	21932	F036/841	20000	3450	4100K	85
40	T-8	60	Medium Bigin	21938	FO40/830	20000	3775	3000K	85
40	T-8	60	Medium Bigin	21939	FO40/835	20000	3775	3500K	85
40	T-8	60	Medium Bicin	21940	FO40/841	20000	3775	4100K	85
59	T-8	96	Single Pin	21897	F096/830	15000	60G0	3000K	85
59	T-8	96	Single Pin	21898	F096/835	15000	6000	3500K	85
59	T-8	96	Single Pin	21899	F096/841	15000	6000	4100K	85

OCTRON® 900 Series Linear T8 Fluorescent Lamps

Watts	Bulb	Nominal Length (in.)	Base	ltem Number	Ordering Abbreviation	Average Rated Life (hours)	Initial Lumens	Color Temp.	CRI
14	T-8	20	Medium Bidin	21868	F014/950/20	20000	750	5000K	90
17	T-8	24	Medium Bipin	21871	F017/950/24	20000	800	5000K	90
21	T-8	30	Medium Bigin	21869	F021/950/30	20000	1000	5000K	90
25	T-8	36	Medium Bidin	21872	F025/950/36	20000	1250	5000K	90
28	T-8	40	Medium Bloin	21870	F028/950/40	20000	1400	5000K	90
32	5-T	48	Medium Bioin	21880	F032/950/48	20000	1675	5000K	90
40	6-T	60	Medium Bicin	21873	F040/950/60	20000	2200	50CCK	90

Ordering Information

OCTRON® CURVALUME® 700 Series T8 Fluorescent Lamps

Watts	Bulb	Nominal Length (in.)	Base	ltem Number	Ordering Abbreviation	Average Rated Life (hours)	Initial Lumens	Color Temp.	CRI
*******	D 010	Longin (m.)		* * * * * * *				•	_ :
16	T-8	10.5	Medium Bipin	21792	FB016/730	20000	1225	3000K	75
16	T-8	10.5	Medium Bigin	21800	F3016/735	20000	1225	3500K	75
16	T-8	10.5	Medium Bipin	21802	FB016/741	20000	1225	4100K	75
24	T-8	16.5	Medium Bigin	21794	FB024/730	20000	2025	3000K	75
24	T-8	16.5	Medium Bioin	21810	FB024/735	20000	2025	3500K	75
24	T-8	16.5	Medium Bipin	21804	FB024/741	20000	2025	4100K	75
31	T-8	22.5	Medium Bipin	21796	FB031/730	20000	2750	3000K	75
31	T-8	22.5	Medium Bipin	21807	FB031/735	20000	2750	3500K	75
31	T-8	22.5	Medium Bigin	21806	FB031/741	20000	2750	4100K	75
31	T-8	22.5	Medium Bipin	21819	F3031/750	20000	2550	5000K	75
32	T-8	22.5	Medium Bipin	21967	FB032/730/6	20000	2850	3000K	75
32	T-8	22.5	Medium Bigin	21968	FB032/735/6	20000	2850	3000K	75
32	T-8	22.5	Medium Bioin	21969	FB032/741/6	20000	2850	4100K	75

OCTRON® CURVALUME® 800 Series T8 Fluorescent Lamps

Watts	Bulb	Nominal Length (in.)	Base	item Number	Ordering Abbreviation	Average Rated Life (hours)	Initial Lumens	Color Temp.	CRI
16	T-8	10.5	Medium Bioin	21834	F3016/830	20000	1300	3000K	85
16	T-8	10.5	Medium Bigin	21835	FB016/835	20000	1300	3500K	85
16	T-8	10.5	Medium Bigin	21836	FB016/841	20000	1300	4100K	85
24	T-8	16.5	Medium Bigin	21874	FB024/830	20000	2 125	300CK	85
24	T-8	16.5	Medium Bipin	21875	F8024/835	20000	2125	3500K	85
24	T-8	16.5	Medium Bipin	21876	F8024/841	20000	2125	4100K	85
31	T-8	22.5	Medium Bigin	21877	FB031/830	20000	2900	3000K	85
31	Ť-8	22.5	Medium Bioin	21878	FB031/835	20000	2900	3500K	85
31	T-8	22.5	Medium Bipin	21879	FB031/841	20000	2900	4100K	85
32	Ť-8	22.5	Medium Bigin	21970	F2032/830/6	20000	3000	300CK	85
32	Ť-8	22.5	Medium Bipin	21971	FB032/835/6	20000	3000	3500K	85
32	Ť-8	22.5	Medium Bipin	21972	FB032/841/6	20000	3000	4100K	85

Sample Specifications OCTRON[®]

Lamps shall be SYLVANIA OCTRON?

(FO17, FO25, FO32, FO36*, FO40, FO96) having a T8 bulb and _____ (medium bipin, single pin**) bases. Lamps shall have a correlated color temperature of _____ (300K, 3500K, 4100K, 5000K) and a color rendering index of _____ (75, 85). They are to be operated on _____ (magnetic rapid start, electronic instant start, electronic rapid start) ballasts.

*Available only in 800 Series **F096 only

OCTRON® CURVALUME®

Lamps shall be SYLVANIA OCTRON? CURVALUME' _____ (FBO FBO31, FBO32') having a ___ ___ (FBO16, FBO24. _ (1½', 6') leg spacing and medium bipin bases. Lamps shall have a correlated color temperature of __ (3000K, 3500K, 4100K, 5000K) and a color rendering index of _____ (75, 85). They are to be operated on _____ (magnetic rapid start, electronic instant start, electronic rapid

FBO32 is the only CURVALUME lamp with 6 leg

For Orders And General Information

OSRAM SYLVANIA National Customer Support Center, 18725 N. Union Street, Westfield, IN 46074

OCTRON® 900 Series

ballasts.

Lamps shall be SYLVANIA OCTRON 900

Series fluorescent lamps having medium bipin

bases. Lamps shall have a correlated color

temperature of 5000K and a color rendering

index of 90. Lamp lengths shall be _____ (20*, 24*, 30*, 36*, 40*, 48*, 60*). Lamps shall be operated on ____ (magnetic rapid start, electronic instant start, electronic rapid start)

Specialty Lamps Markets Phone: 800/762-7191 Industrial/Commercial Phone: 800/255-5042 Fax: 8C0/762-7192 Fax: 800/255-5043 **Consumer Products** Phone 800/842-7010 National Accounts: Phone 800/562-4671 Industrial Commercial Fax: 800/842-7011 Phone: 800/562-4672 Consumer Products 800/562-4674

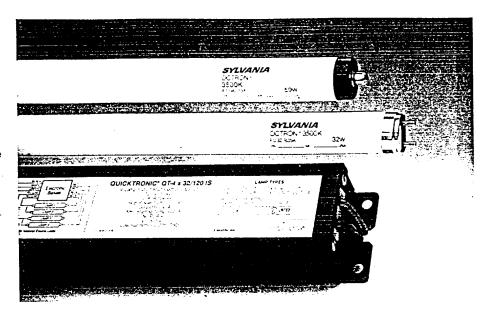
Electronic Lighting Systems

The System Solution



A Complete Range of Fluorescent Systems

OSRAM SYLVANIA offers a QUICKTRONIC® system to provide optimum performance with every OCTRON® and OCTRON® CURVALUME® T8 lamp. There are also QUICKTRONIC systems for DULUX® L and F96T12 lamps. All QUICKTRONIC systems have a high ballast factor and high frequency circuitry for maximum light output and efficiency with minimal lamp flicker. Multi-lamp ballasts power up to four lamps with parallel circuitry that keeps remaining lamps lit when one or more fails. QUICKTRONIC systems are ideal for either retrofit or new installations.



QUICKTRONIC® SYSTEM 32

QUICKTRONIC SYSTEM 32 is designed to use OCTRON 32W T8 fluorescent lamps and provides illumination equal to an F40T12 system with 40 percent less energy usage. It can also operate 17W, 25W and 40W T8 lamps, OCTRON CURVALUME lamps and 40W T5 twin lamps. QUICKTRONIC SYSTEM 32 is available in 120V and 277V versions to drive one, two, three and four-lamp systems. OCTRON and OCTRON CURVALUME T8 lamps are available in 75, 85 and 90 CRI versions and provide energy savings, high luminous efficacy and excellent color rendition. The DULUX L 40W is a single ended twin tube lamp that provides nearly the same light output as a 4-foot linear lamp.

QUICKTRONIC® SYSTEM 36

QUICKTRONIC SYSTEM 36 is designed to operate OCTRON 36W T8 lamps. It provides up to 30 percent more lumen output than a standard 32W T8 system. It also operates DULUX L 39W twin tube fluorescent lamps. QUICKTRONIC SYSTEM 36 is a two-lamp system available in 120V and 277V versions. OCTRON 36W T8 lamps are available in 3000K, 3500K and 4100K versions and have a CRI of 85. They provide exceptional luminous efficacy and energy efficiency. The DULUX L 39W single ended twin tube lamp provides nearly the same light output as a 4-foot linear lamp and has an efficacy of up to 81 lumens per watt.

QUICKTRONIC® SYSTEM 59

QUICKTRONIC SYSTEM 59 is designed to operate OCTRON F096T8 lamps. It provides illumination equal to F96T12 lamps with 40 percent less energy usage. Because it is smaller and lighter than the F96T12 magnetic ballast it replaces, installation is easier and more flexible. QUICKTRONIC SYSTEM 59 is a two-lamp system available in 120V and 277V versions.

OCTRON FO96T8 lamps have a single pin base and are designed to replace F96T12 lamps. OCTRON FO96T8 lamps come in three color temperatures—3100K, 3500K and 4100K and are available in 75 CRI and 85 CRI versions.

QUICKTRONIC® SYSTEMS

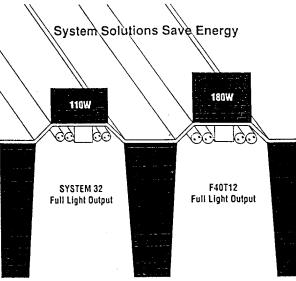
QUICKTRONIC® SYSTEM 17

QUICKTRONIC® SYSTEM 17 is designed to operate OCTRON® 17W T8 and OCTRON® CURVALUME® 16W lamps with full energy efficiency, high lumen output and low harmonic distortion. QUICKTRONIC SYSTEM 17 is a three-lamp system available in 120V and 277V versions.

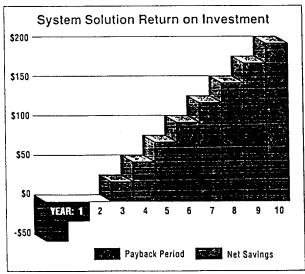
OCTRON 17W T8 and OCTRON CURVALUME 16W lamps are available in both 75 and 85 CRI versions. When used in OUICKTRONIC SYSTEM 17 they provide energy savings, high luminous efficacy and excellent color rendering.

QUICKTRONIC® SYSTEM 96

QUICKTRONIC SYSTEM 96 is designed to operate both standard and energy saving SYLVANIA F96T12 lamps and F96T12/HO lamps. It provides high lumen output, extremely efficient operation and up to 20 percent energy savings when compared to older magnetic ballasts. Other T12, SLIMLINE and H.O. lamps can also be driven. QUICKTRONIC SYSTEM 96 is a two-lamp system available in 120V and 277V versions. SYLVANIA F96T12 SLIMLINE and F96T12 High Output lamps are available in a range of colors with up to 80 CRI. Standard and energy saving versions are available.



Power Input vs. Light Output for QUICKTRONIC® System 32 Compared to F40T12 System.



10 Year Payback on QUICKTRONIC 1 System 32 vs. F40T12 System

QUICKTRONIC® SYSTEM 55

QUICKTRONIC SYSTEM 55 is designed to operate DULUX® L 55W twin tube fluorescent lamps. It provides up to 50 percent more lumen output than standard T5 twin lamps with no loss in system efficiency. This is the ideal system for high lumen indirect, cove and 2x2 fixtures.
QUICKTRONIC SYSTEM 55 is offered as a one or two-lamp system in 120V and 277V versions.

DULUX L 55W twin tube lamps provide up to 50 percent more light output than standard T5 twin lamps. DULUX L lamps offer an efficacy of up to 81 lumens per watt and are available in 3000K, 3500K and 4100K versions.

OSRAM SYLVANIA

System Solutions

Ordering Information

QUICKTRONIC[®] Electronic Systems for Fluorescent Lamps

ltem Number	Ordering Abbreviation	Voltage (VAC)	Lamp Type	No of Lamps	Input Wattage (W	Ballast) Factor	%THD
49256	OT1X32/120IS	120	32W-T8	1	31	.93	<20
49257	QT1X32/277IS	277	32W-T8	1	31	.93	<20
49270	QT2X32/120IS	120	32W-T8	2	62	.95	₹20
49268	QT2X32/277IS	277	32W-T8	2	62	.95	<20
49258	QT3X32/120IS	120	32W-T8	3	88	.93	<20
49260	QT3X32/277IS	277	32W-T8	3	88	.93	<20
49265	QT4X32/120IS	120	32W-T8	. 4	110	.87	<20
49263	QT4X32/277IS	277	32W-T8	4	110	.87	<20
49262	QT2X36/120IS	120	36W-T8	2	78	1.05	<20
49257	QT2X36/277IS	277	36W-T8	2	78	1.05	<20
49340	QT2X59/120iS	120	59W-T8	2	105	.85	<20
49346	QT2X59/2771S	277	59W-T8	2	105	.85	<20
49252	QT3X17/120IS	120	17W-T8	3	50	.95	<20
49253	QT3X17/277IS	277	17W-T8	3	50	.95	<20
49250	QT2X96/120!S	120	F96T12	ž	135	.88	<20
49254	QT2X96/277IS	277	F96T12	2	135	.88	<20
49255	QT2X96/120HQ	120	F96T12/H0	5	210	.87	<20
49251	QT2X95/277HQ	277	F96T12/H0	5	210	.87	<20
49287	QT2X55/120IS	120	55W Dulux L	2	110	1.00	<20
49288	QT2X55/277IS	277	55W Dulux L	2	110	.91	<20

ACCUTRONIC™ Low Voltage DC Electronic Systems for Compact Fluorescent Lamps

		•	•			·1· -	
	Ordering Abbreviation	Voltage (VAC)	Lamp Type	No of E Lamps :	Input Wattage (W)	Ballast Factor	
49401 49400	AT7-9/12 AT7-9/24	12 24	7-9W Dulux SE & DE 7-9W Dulux SE & DE	1	10 10	1.00	

POWERTRONIC™ Electronic Systems for HID Lamps

Item Number	Abbreviation	Voltage (VAC)	Lamp Type	No of Lamps	Input Wattage (W)	Ballast Factor	%THD
49300	PT-DE 70/120	120	70W HQI-DE	1	80	1.00	<10
49301	PT-DE 70/277	277	70W HQI-DE		80	1.00	<10

For Orders And General Information

OSRAM SYLVANIA National Customer Support Center, 18725 N. Union Street, Westfield, IN 46074

Industrial/Commercial Phone: 800/255-5042

Fax: 800/255-5043 Phone: 800/842-7010 Fax: 800/842-7011 Consumer Products

Specialty Lamps/Markets Phone: 800/762-7191 National Accounts:

Fax: 800/762-7192

Phone: 800/562-4671 Phone: 800/562-4672 Fax: 800/562-4674 Industrial/Commercial Consumer Products

Product Information Bulletin

DULUX® D Compact Fluorescent Lamps

DULUX® D fluorescent lamps are more compact, use 75% less energy than incandescent lamps

Available in a choice of 9,13, 18 or 26 watts, these energysaving lamps include sizes which operate on the same ballasts as DULUX S lamps and higher wattage options for more light output.

More compact than DULUX S, the 9 and 13 watt DULUX D lamps are ideal for retrofit and other energy-saving fixtures where a small overall length is required. DULUX D 18 and 26 watt lamps are used in dedicated fixture designs where high light output and maximum energy efficiency are required.

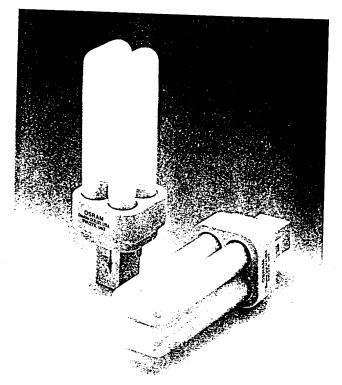
The full family of DULUX D lamps, including 9, 13, 18, and 26 watt sizes, features a complete range of lumen packages up to 1800 lumens. They provide an even light distribution and serve as energy-saving replacements for incandescent lamps of up to 100 watts.

- Up to 75% less power consumption compared to incandescent lamps
- Long life of up to 10,000 hours for increased replacement intervals
- High luminous efficacy of up to 69 lumens per watt
- Trichrome phosphors for color rendition of up to 85 C.R.I.

- Symmetrical luminous intensity.
- A choice of 2700K warm color temperature, 3000K incandescent-like light, 3500K white light, and 4100K cool color temperature.
- Plug-in base with integrated starter and interference suppressor
- DULUX D lamps in the 18 and 26 watt sizes are designed for use in dedicated fixtures
- Made in U.S.A.

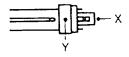
Applications:

Downlights, sconces, wall washers, task lights and pendant fixtures.



osram **Sylvani**a

Specifications and Ordering Information



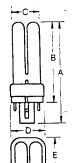
Item Number	Ordering Abbreviation	Buib Type	Base '	Nominal Watts	Initial Lumens	Burning Position	Max. Base Temp. at Point X (F/C)	Max. Bulb Temp. at Point Y (F/C
20689	CF90D/827	T-4	G23-2	9	575	Um versa	194 /901	302, 150,
20690	CF9DD/835	T-4	G23-2	9	575	ijn.versa	1941 90	302 50
20691	CF13DD/827	T-4	GX23-2	13	860	Universa	1947/901	302 150
20705	CF13DD/830	T-4	GX23-2	:3	860	Universa	194190	302 150
20692	CF13DD/835	T-4	GX23-2	13	660	Ur Lersa	1941/901	302 - 150
20092 20708	CF13DD:341	T-4	GX23-2	13	260	Unwersa	1943/90	302 1501
20676	CF18DD/327	T-4	G24J-2	13	1250	Unitersa	1947/901	302:150:
20709	CF18DD/830	T-4	G24a-2	18	1250	Unmarsa	1347.90	302: 150:
20677	CF18DD/835	T-4	G24d-2	18	1250	Un Jersa	1947-90.	302: 150:
20678	CF18DD:841	T-4	G24d-3	13	1250	Universa	1941/901	302: 150:
	CF26DD/827	T-4	G24d-3	26	1800	Universa	1347,40	302 - 150 -
20679	CF26DD/830	T-4	G24d-3	25	1300	Universa	1947/901	302, 150,
20710		T-4	G24d-3	25	.300	Universa	1947/901	3021 1501
20680 20681	CF26DD/835 CF26DD/841	T-4	G24d-3	26	1300	Universa	1947/90	3021 1501

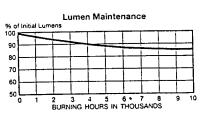
^{1.} The G23-2 and GX23-2 bases are not compatible with some existing G23 and GX23 lampholder designs

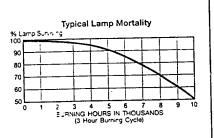
Electrical and Photometric	Ordering Abbreviation	Nominal Lamp Voltage (V)	Nominal Lamp Current (A)	Initial Lumens (Im)	Luminous Efficacy (Im/W)	Color Temp.	CRI	Average Rated Life (hrs.)*	Min. Starting Temp. (F/C)*
Specifications			.180	575	6≟	27004	82	10000	25: -4:
Specifications	CF9DD-827	59		575	61	3501	85	100001	25 4
	CF9DD/835	59	.180				32	10000	32°.0°
	CF13DD/827	59	.285	೦ಕಿ	66	2700K		:3000	35,/0,
	CF13DD/830	59	.235	860	66	3000K	85		32 70
	CF13DD/835	. 59	.295	860	66	3500K	85	1,000	
	CF13DD/841	59	.285	860	66	41005	85	10000	323/03
	- CF18DD/827	100	.220	1250	69	2700 K	82	10000	15%-94
		100	.220	1250	69	3000K	8 5	13000	15%-9°
	CF18DD/930		.220	1250	69	3500K	85	10000	151.91
	CF13DD/335	100			69	4120K	95	10060	153/-93
	CF18DD/841	100	.220	1250			82	13000	15' -9'
	· CF26DD/827	105	.315	1300	69	2700K		10000	151-91
NOTE: Equipment manufacturers are	CF26DD/830	105	.315	1800	69	3000K	85		157-93
advised to consult the relevant ANSI and	CF26DD/835	105	.315	1900	69	3500K	85	10000	
EC standards for the maximum allowable	CF26DD/841	105	.315	1300	69	4100K	85	10000	157-93
dimensions and temperature to insure com- patibility with similar products.	*At 3 hours per start.	"At rated line	voltage and correc	tiamp current.					

Dimensions and **Performance Charts**

Watts	A. Max. Overall Length [in (mm)]	B. Base Face to Top of Lamp [in (mm)]	C. Width of Lamp [in (mm)]	D. Maximum Base Width [in (mm)]	E. Maximum Base Length [in (mm)]
^	4.37 (111)	3.46 (88)	1.10 (28)	- 38 (35)	1.38 (35)
9 13	4.84 (123)	3.90 (99)	1.10 (28)	1,38 (35)	1.38 (35)
13	6.79 (172.5)	5.91 (150)	1.10 (28)	1 38 (35)	1.38 (35)
26	7.58 (192.5)	6.69 (170)	1.10 (28)	1.33 (35)	1.38 (35)







For Orders and General Information

OSRAM SYLVANIA National Customer Support Center, 18725 N. Union Street, Westfield, IN 46074

Industrial/Commercial Phone: 800-255-5042

Specialty Lamps/Markets Fax: 800-255-5043

Phone: 800-762-7191

Fax: 800-762-7192

Consumer Products

Phone: 800-842-7010 Fax: 800-842-7011

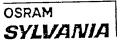
National Accounts

Industrial/Commercial Consumer Products

Phone: 800-562-4671 Phone: 800-562-4672

Fax: 800-562-4674

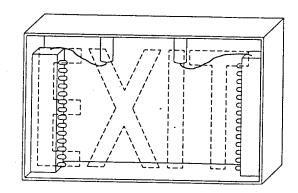


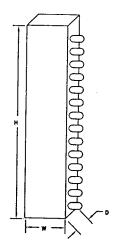


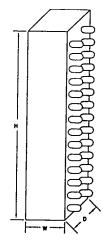
Technology Brought to Light

LED Exit Sign Retrofit Kits

- -1.8 3.6 Input Watts/Fixture. (Replaces standard 20-25 watt lamps.)
- · Convert existing incandescent EXIT signs to use energy efficient LED light strips.
- Each kit contains two LED light strips and a reflective backing to provide even light distribution and a new red lens for the fixture.
- Estimated life is 25 years.
- Complies with OSHA and NFPA requirements.
- Available in four base styles to fit existing sockets or as a hard wire kit.
- LED light strips emit a bright red light and are not recommended for use with green signs.
- In addition to DGSC standard warranty, manufacturer's 25 year warranty applies.
- UL approved.







ı		 	
	TOTAL		NATIONAL
	WAITS		STOCK NUMBER

SINGL	SINGLE FACE KITS										
DIM: 6" H X 7/8" W X 3/4" D , each strip.											
1.8	DC BAY	120	6240-01-381-1658								
1.8	INTERMEDIATE	120	6240-01-381-1702								
1.8	CANDELABRA	120	6240-01-381-1843								
1.8	MEDIUM	120	6240-01-381-1589								
1.8	HARD WIRE	120	6240-01-381-1957								
1.8	HARD WIRE	277	6240-01-381-2061								

Information provided by Computer Power Inc. Astralite Divison.

TOTAL WATTS		NATIONAL STOCK NUMBER

DOUE	BLE FACE KITS		
	DIM: 6" H X 7/8" W	X 1 1/2" I	D , each strip.
3.6	DC BAY	120	6240-01-381-1594
3.6	INTERMEDIATE	120	6240-01-381-1633
3.6	CANDELABRA	120	6240-01-381-1695
3.6	MEDIUM	120	6240-01-381-1552
3.6	HARD WIRE	120	6240-01-381-1818
3.6	HARD WIRE	277	6240-01-381-1940

APPLICATION - HALLWAYS

Ultrasonic and PIR Sensors in Hallways

Application

Hal	lways, corridors, aisleways.			Hallway length = 80'
1.	Check square footage and ceiling height of area.			
2.	Use coverage templates.	1		
	Do not use ultrasonic sensor if ceiling height exceeds 14 feet.			Payback/ROI
4.	CI-100's are recommended for aisleways – do not use ultrasonics.		F	Ultrasonic sensor & power pack = \$125.00
5.	installed 6 to 8 feet away from air			Installation = \$60.00 Total Cost =\$185.00 Payback = 7.2 Months
_	supply diffusers.	_		ROI - 166%
о.	Point ultrasonic receiver openings down the hallway. Mount CI-100			CI-100 &
	with lens facing down the hallway.		0	power pack = \$100.00
7.				Installation = \$60.00 Total Cost = \$160.00
	match activity level of the space.		با	Payback = 6.2 Months ROI = 193%
	Savings		П	
(S	ee enclosed "Timer Test Study")			
8 -	80 Watt 2' x 2' Troffers			
	64Kw x\$.10 per Kwh	1		
- \$	3.064 cost per hour			
Sa	ve 12 hours per day Mon-Fri			L
	ive 33 hours per weekend			
	no do mouno por mounome	1	or bere	
To	otal hours saved = 93 hours x 52 weeks	L		
-	4836 hours per year	0	Ultrasonic Sensor	•
	836 hour x \$.064 per hour \$309.50 ANNUAL SAVINGS		CI-100 Passive In	frared Sensor
	CDIII IAC JAURINA VU.EVUG			

039.JC.2 **Sensor, power pack, and installation costs are approximate.

APPLICATION - RESTROOMS

Ultrasonic Sensors in Restrooms

Application

Large restrooms (with or without partitions).

- 1. Check square footage of area.
- 2. Use coverage templates.
- Place sensor as close as possible to stalls. Ideally, over the top of stall entrance.
- Make sure ultrasonic sensors are installed 6 to 8 feet away from air supply diffusers.
- 5. Specify time-delay and sensitivity to match activity level of the space.

Savings

(See enclosed "Timer Test Study")

- 8 80 Watt 2' x 4' Fluorescent fixtures
- = .64Kw x .10 per Kwh
- \$.064 cost per hour (Consider exhaust fan and ballast load)

Save 8 hours per day Mon-Fri (Typically lights in bathrooms are on 16 to 24 hours a day.)

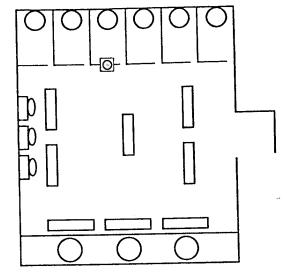
Save 27 hours per weekend

Total hours saved - 67 hours x 52 weeks

- 3,484 hours per year

3,484 hour x \$.064 per hour

- \$222.98 ANNUAL SAVINGS



Ultrasonic Sensor

Payback/ROI

Ultrasonic sensor & power pack = \$125.00

Installation - \$60.00

Total Cost =\$185.00

Payback = 9.9 Months

ROI = 121%

**Sensor, power pack, and installation costs are approximate.

039 JC 2

APPLICATION - AREAS UNDER 300 SQ FT

PIR Sensors and PIR Automatic Wall Switches in Building Areas of Under 300 Square Feet

Application

Offices, computer rooms, maintenance areas, vending areas, copy rooms, utility rooms.

- 1. Check square footage of area.
- 2. Use coverage templates.
- 3. Make sure PIR sensors have clear view of the controlled area.
- 4. Place sensor or "mask" lens so it does not "see" outside the room.
- Specify time-delay and sensitivity to match activity level of the space.

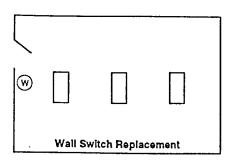
Savings

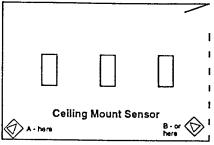
- 3 176 Watt 2' x 4' Troffers
- = .528Kw x \$.10 per Kwh
- \$.053 cost per hour

Save 4 hours per day Mon-Fri Save 12 hours per weekend

Total hours saved - 32 hours x 52 weeks

- 1,664 hours per year
- 1,664 hour x \$.053 per hour
- \$88.19 ANNUAL SAVINGS





- W WI or WS Series
 Automatic Wall Switch
- WPIR Sensor
 For enclosed office, use placement A or B.
 If the wall on the right does not exist, use placement B.

Payback/ROI

WI or WS Wall Switch = \$60.00 Installation = \$20.00 Total Cost = \$80.00 Payback = 10.9 Months ROI = 110%

WPIR & power pack = \$80.00 Installation = \$60.00

Total Cost -\$140.00

Payback = 19 Months

ROI

- 63%

**Sensor, power pack, and installation costs are approximate.

039.JC 2

APPLICATION - COMMON AREA

Ultrasonic, PIR, and Dual Technology Sensors in Common Building Areas Larger Than 300 sq ft

Application

Conference rooms, computer rooms, maintenance areas, classrooms, vending areas, lunch rooms, copy rooms

- 1. Check square footage of area.
- 2. Use coverage templates.
- 3. Make sure PIR sensors have clear view of the controlled area.
- Place sensor or "mask" lens so it does not "see" outside the room.
- Specify time-delay and sensitivity to match activity level of the space.

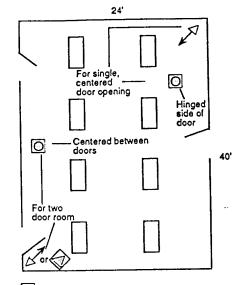
Savings

- 8 176 Watt 2' x 4' Troffers
- = 1.41Kw x \$.10 per Kwh
- = \$.141 cost per hour

Save 4 hours per day Mon-Fri Save 12 hours per weekend

Total hours saved - 32 hours x 52 weeks

- 1,664 hours per year
- 1,664 hour x \$.141 cost per hour
- \$234.62 ANNUAL SAVINGS



Ultrasonic Sensor

← Dual Technology Sensor

CI-100 Passive Infrared Sensor

Payback/R01

Ultrasonic sensor & power pack = \$125.00

Installation - \$60.00

Total Cost =\$185.00

Payback = 9.5 Months

ROI - 127%

DT-100L & power pack = \$160.00

Installation = \$60.00

Total Cost =\$220.00

Payback = 11.3 Months

ROI - 107%

CI-100 & power pack - \$100.00

Installation = \$60.00

Total Cost -\$160.00

Payback = 8.2 Months

ROI = 147%

**Sensor, power pack, and installation costs are approximate.

039JC.2

APPLICATION - OPEN OFFICE AREA

Ultrasonic, PIR, and Dual Technology Sensors in Open Office Area & Partitioned Offices

Application

- 1. Check square footage of area.
- 2. Use coverage templates.
- 3. Designing for smaller zones results in greater energy savings.
- 4. Make sure PIR sensors have clear view of the controlled area.
- 5. Specify time-delay to match activity level of the space.

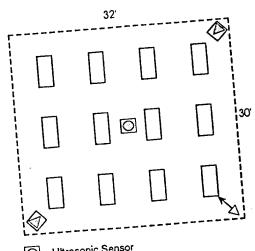
Savings

(See enclosed "Timer Test Study") For an open office area with 12 - 3 lamp fixtures = 1.44 Kw x \$.10 per Kwh = \$.144 cost per hour

Save 4 hours per day Mon-Fri Save 6.5 hours per weekend

Total hours saved = 26.5 hours x 52 weeks = 1,378 hours per year

1,378 hour x \$.144 cost per hour - \$198.43 ANNUAL SAVINGS



- Ultrasonic Sensor
- ✓ Dual Technology Sensor
 - CI-100 Passive Infrared Sensor

Payback/ROI

Ultrasonic sensor & power pack = \$125.00 Installation - \$60.00 Total Cost -\$185.00

Payback = 11.2 Months 107% ROI

DT-100L & power pack = \$160.00 Installation - \$60.00

Total Cost =\$220.00

Payback = 13.3 Months

- 90% ROI

2 - CI-100 sensors & power pack = \$180.00

Installation = \$90.00 Total Cost = \$270.00

Payback = 16.3 Months

74% ROI

**Sensor, power pack, and installation costs are approximate.

039.JC.2



Applications

Office

The Watt Stopper manufactures the most complete line of automatic lighting controls. A combination of Ultrasonic, Passive Infrared and Dual Technology sensors can be used to configure any application. For specific information on how the technologies work see "Passive Infrared Sensor Technology", "Ultrasonic Technology", and "Dual Technology" sections under 'technical data'. Some of the most common uses are described here.

The Watt Stopper occupancy sensors are the perfect product to control lighting in the office environment. With all three technologies, effective energy savings can be achieved in every space. Our recommendations are:

OFFICES - WPIR, WI or WS series wall switches	20.00	Savings
SPEN OFFICE SPACES - CL100 CL200, W.1000A W2000A, D1-1002	5-25%	Savings
• CONFERENCE ROOMS - W500A, W1000A, DT-100L, CI-100		Savings
• COMPUTER ROOMS - DT-100L, WPIR, CI-100		Savings Savings
• RESTROOMS - Ultrasonic sensors		Savings
• CORRIDORS - CI-100-2, W2000H	20-00%	Savings

Colleges & Schools

Buildings

The Watt Stopper occupancy sensors have been very successful in elementary, secondary, and college applications. For schools we recommend:

LARGE CLASSROOMS - DT-100L, W2000A, CI-100, CI-200 SMALL CLASSROOMS - W1000A, CI-100, WPIR CORRIDORS - CI-100-2, W2000H RESTROOMS - Ultrasonic sensors TEACHERS OFFICES - WPIR, WI or WS series wall switches GYM'S AND MULTIPURPOSE - DT-100L, CI-100	0-75% 30-60% 35-75% 30-50%	Savings Savings Savings Savings Savings Savings

Retail & Hotels

The Watt Stopper occupancy sensors help you reduce energy costs while still meeting the special needs of your customers. For the most dramatic savings we recommend:

• STORAGE AREAS - DT-100L, Ultrasonic, WPIR, CI-100, CI-200 • MEETING ROOMS - DT-100L, W500A, W1000A, CI-100, CI-200 • WAREHOUSES - DT-100L, W2000A, CI-100, CI-200	4.0.0.	Savings Savings Savings
---	--------	-------------------------------

HVAC, EMS, Light Level & Misc

HVAC and Energy Management Systems can be used in combination with any and all Watt Stopper products. Every sensor can be used to turn lighting on and off in addition to producing information or signals for the other systems.

- HVAC Use the DT-100L, CI-100 or CI-200 for independent "on" and/or independent "off" for any area.
- EMS The Watt Stopper sensors can be used to control lighting loads independently or in conjunction with EMS systems.
- Light Level The DT-100L, CI-100 and CI-200 have a separate output to isolate a circuit for light level control.
- Cold Storage, Outdoor applications: CB-100, CB-200

The Watt Stopper*, Inc. 2800 De La Cruz Blvd

Santa Clara, CA 95050 Tel: (408) 988-5331 Fax: (408) 988-5373

National Technical Support Plano, Texas: (800) 879-8585

39 JC 4

TITUS® Variable Volume Retrofit Terminals ➤ Description

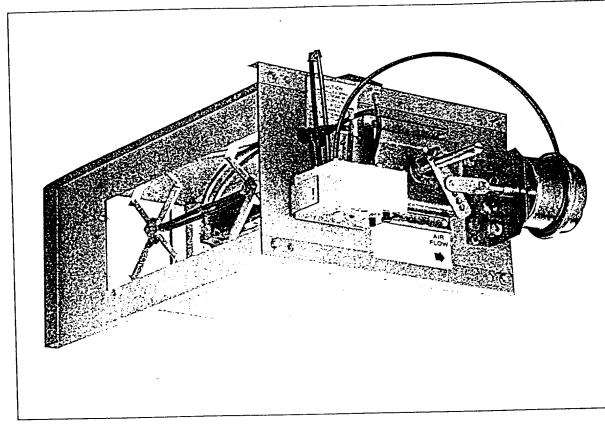
External Retrofit - Slides into Duct

Models:

PQCV ■ Pressure Independent Control ■ Pneumatic

AQCV ■ Pressure Independent Control ■ Analog Electronic

DQCV ■ Pressure Independent Control ■ Digital Electronic



- ► Converts constant volume systems to variable air volume. The resulting control performance approaches that of the current TITUS ESV Series single duct terminals.
- ► Easy, low cost installation into rectangular duct. The installer simply cuts a rectangular hole in the side of the duct, cuts away the insulation (if present). slides the unit into the duct, and screws the mounting plate to the side of the duct. Reinforcing angles are screwed to the top and bottom edges (see the illustration on the facing page).
- ➤ Pressure independent controls. Choice of pneumatic, analog. or digital electronic.
- ➤ TITUS multi-point, center averaging velocity sensor for accurate control even when duct velocities are not uniform across the duct cross section.

- ➤ Damper position is indicated by an arrow formed into the end of the damper shaft.
- ► Damper is constructed of 16 gauge galvanized steel.
- ➤ Elastomer seals on the long edges of the damper blades. The short edges of the damper blades seal against flexible metal strips in the sides of the casing.
- ► Damper shaft is supported in a stainless steel bearing.
- ► Leakage is less than 2% at 1.0".
- ► Gaskets under the mounting plate and at the end of the orifice plate seal the unit to the sides of the duct (see the illustration on the facing page).
- ► Reinforcing angles provide added duct stiffness at the insertion point.

For further information on TITUS controls, please see the following pages in Catalog Section G:

Pneumatic:

G7 - G13

Analog electronic:

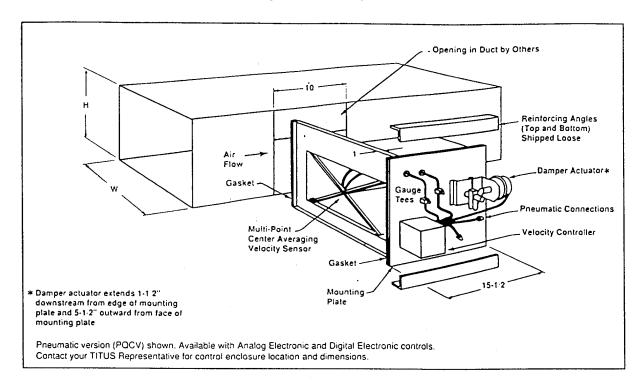
G15 - G17

Digital electronic:

G18 - G20

TITUS[®] Variable Volume Retrofit Terminals ➤ Description

QCV Series - Dimensions



QCV Series ■ Available Duct Sizes

Unit	CFM	Max 🛦					Avai	lable	Duct	Sizes			
Size	Range*	CFM		Width W								Height H	
	0	100		5	6	8		10		12			5
A	to	to			6	8		10		12			- 6
	200	200			6	8		10		12			8
	0	150		_	6	8		10		12		14	6
В	to	to				8		10		12		14	8
	300	300						10		12		14	10
	0	200	8		10		12		14		15		6
С	to	to	8		10		12		14		16		8
	400	400	8		10		12		14		16		10
			10		12		14		16		18		8
1	0	350	10		12		14		16		18		9
D	to	ta	10		12		14		16		18		10
	700	700	10		12		14		16		18		12.
					12		14		16				14
	0	500			14	16		18		20	22	24	8
Ε	to	to			14	16		18		20	22	24	10
	1000	1000	ĺ		14	16		18		20	22	24	12
	0	500	18		20	22		24		26			6
F	to	to	18		20	22		24		26			8
	1000	1000	18		20	22		24		26			10
			12		14		16		18		20	22	10
1	0	600	12		14		16		18		20	22	12
G	to	to	12		14		16		18			22	13
1	1100	1100	12		14		16		18		20	22	14

U	nit	CFM	Max 🛦					A1	vailat	ele Du	ict Siz	es		
Si	ze_	Range*	CFM						Widt	h W				Height H
Г		0	800	18		20		22		24	26	28	30	10
1	н	to	to	18		20		22		24	26	28	30	12
L		190	1900	18		20		22		24	26	28	30	14
		0	1000	18	20	22	24		26		28			12
1	J	to	to	18	20	22	24		26		28			14
L		2400	2400	18	20	22	24		26		28			16
		0	1350	20		22		24		26	28	30		14
1	ĸ	to	to	20		22		24		26	28	30		16
l		3800	3800	20		22		24		26	28	30		18
Г		0	1800			30	32	34	36					12
ŀ	L	to	to			30	32	34	36					14
L		5400	5400			30	32	34	36					16
		0	1750	Г	22	24	26	28	30	32	34	36		16
1	M	to	to		22	24	26	28	30	32	34	36		18
1		5400	5400		22	24	26	28	30	32	34	36		20
		0	2300		24	25	28	30	32	34	36			18
	N	to	to	l	24	26	28	30	32	34	36			20
1		6700	6700	1	24	25	28	30	32	34	36			24
L				l	24	26	26	30	32	34	36			26
		0	4000-	30	32	34	36	38	40	42	44	46		20
	Р	to	to	30	32	34	36	38	40	42	44	46		24
L		10000	10000	30	32	34	36	38	40	42	44	46		26
		0	5000	Ī	40	42	44	46	48	50	52			20
	R	to	to		40	42	44	46	48	50	52			24
		15000	15000		40	42	44	45	43	50	52			26

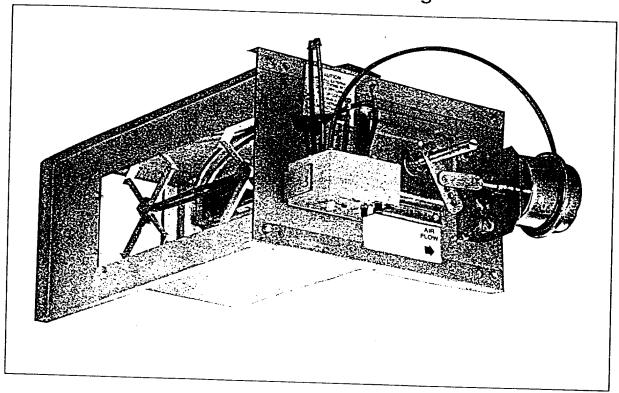
^{*} CFM range from zero minimum to the recommended maximum setting.

Note: See chart for flow ratings.

[▲] Range of maximum cfm settings.

TITUS[®] Variable Volume Retrofit Terminals ➤ Performance Data

Model: PQCV ■ Recommended CFM Ranges



- ► Total CFM Range refers to the overall range of adjustment of the pneumatic velocity controller, from the lowest MIN setting to the highest MAX setting.
- ► Minimum CFM Range refers to the range of adjustment of the MIN setting of the pneumatic velocity controller.
- ► Maximum CFM Range refers to the range of adjustment of the MAX setting of the pneumatic velocity controller.
- *Note: Factory settings (except zero) will not be made below this range because control accuracy would be reduced.

Inlet	Total	CFM R	anges of Minimu	m and Maximum	Settings		
Size	CFM		Controller	TITUS I Controller			
	Range	Minimum	Maximum	Minimum	Maximum		
A	0.200	*55-200	100-200	*75-200	100-200		
8	0-300	.80-300	150-300	105-300	150-300		
С	0-400	110-400	195-400	140-400	195-400		
D	0-700	180-700	320-700	230-700	320-700		
E	0-1000	*260-1000	475-1000	*335-1000	475-1000		
F	0-1000	*250-1000	455-1000	*325-1000	455-1000		
G	0-1100	*280-1100	510-1200	*360-1100	510-1200		
Н	0-1900	*435-1775	795-2000	*565-1775	795-2000		
J	0-2400	*540-2180	980-2400	*695-2180	980-2400		
к	0-3800	*725-2945	1320-3800	*935-2945	1320-3800		
L	0-5400	1980-3975	1780-5500	1260-3975	1780-5500		
М	0-5400	1970-3870	1735-5500	1225-3870			
N	0-6700	1220-4975	2225-6700	1575-4975	1735-5500		
P	0-10.000	1860-7500	3400-10.000		2225-6700		
R	0-15.000	*2750-11.000	5000-15.000	*2400-7500 *3500-11,000	3400-10,000 5000-15,000		

TITUS[®] Variable Volume Retrofit Terminals ➤ Performance Data

QCV Series - Application Data - NC Values

					Room I	Voise C	riterion	(NC)		
Unit	CFM	Min.	Min.	75°	7b² :	0.50	JPs =	1.00	7b2 =	3.00
Size	0	^{3P} s	Disch.	Rad.	Disch.	Rad.	Disch.	Rad.	Disch.	Rad
	100	.10	_	_	27	_	35	23	48	38
Α	150	.23	-	_	28	_	36	24	49	39
100%	200	.40	17	_	*	*	37	25	49	,40
	100	.05	-	_	24	_	35	23	48	38
В	200	.17	-		27		36	24	49	39
100%	300	.38	19		*	*	37	25	49	40
	150	.04	_	_	25		31	21	45	35
С	200	.07	- '	–	27	-	33	23	48	38
100%	300	.14		-	28		34	24	49	39
	400	.25	19		*	*	35	25	49	39
	200	.05	_	_	21	_	30	21	42	35
٥	400	.20			24		33	24	49	39
50%	600	.44		_	25	l —	34	24	46	40
	700	.60	-	_	*	*	34	25	46	41
	500	.14	_	_	23	_	31	22	48	38
Ε	800	.36	_	24	-	 	33	24	49	39
40%	1000	.56	-	-	*	*	33	25	49	39
	500	.13	_	_	23	_	31	22	48	38
F	800	.32		-	24		33	24	49	39
40%	1000	.50	-	-	*	*	33	25	49	39
	400	.08		-	20	_	29	19	40	36
G	600	.18	1 —	-	23	-	31	22	42	38
30%	900	.39	-		23		32	23	43	39
	1100	.58	_	-	*	*	32	2÷	43	39
	800	.11	-	_	20	_	29	21	40	36
н	1200	.25	-	_	21	—	29	22	41	39
20%	1600	.44		-	22	_	30	23	41	39
	1900	.61	_	-	*	*	30	24	42	40
	1000	.10	-	_	19	T —	27	22	39	38
J	1500	.23	-	_	20	_	27	23	40	38
15%	2000	.41		-	21		28	24	40	39
1	2400	.59	19		*	*	28	25	41	40

					Room	Noise C	riterion	(NC)		
Unit	CFM	Min.	Min.	75e	752 :	= 0.50	JPs =	1.00	752 :	3.00
Size		∆Ps	Disch.	Rad.	Disch.	Rad.	Disch.	Rad.	Disch.	Rad
	2000	.17	-	_	_	_	26	23	33	38
ĸ	2700	.30		-	19		27	23	33	38
10%	3350	.46		-	19	_	28	24	3.4	39
	3800	.59	21	-	*	*	28	25	34	40
	2750	.05	_	_	_	_	26	23	38	38
L	3700	.17	-	_	13	_	26	24	39	39
10%	4650	.38	-		19		27	21	39	40
. 1	5400	.29	-	_	19	-	27	25	39	40
	2700	.10	+	_	18	-	26	23	38	38
M	3600	.18	-		19	_	26	23	39	39
10%	4500	.28	-	_	19		27	24	39	40
	5400	.40	19	—	20	-	27	25	39	41
	2300	.14	_		13	-	25	22	37	38
N	3400	.36	l —		19		26	22	38	38
10%	45CO	.56		_	19	l —	26	23	3 9	39
1	5600	.22	-		19	-	27	24	39	39
	.6700	.31	-	—	20		27	25	39	41
	3400	.13				_	_	21	24	37
P	5200	.32	_	l —	_	l —	-	22	25	38
5º%	7000	.50	l —		-	-	-	23	26	39
	8800	.28	-			-	-	24	26	40
	10,000	.36	_	_		_	_	25	27	41
	7500	.11		_	-	_		21	25	34
R	10.000	.20				-		22	26	35
5%	12.500	.32	_	l —	—		-	23	26	35
	15.0C0	.45	_			_	_	24	27	36

- $ightharpoonup \Delta P_{
 m S}$ is the difference in static pressure from inlet to discharge, in inches wg.
- ► Minimum △P_S is the lowest inlet-todischarge static pressure difference (damper wide open).
- ► Dash (—) in a space indicates an NC value less than 18.
- ► Asterisk (*) in a space indicates that the minimum ΔP_S for that cfm is greater than 0.5" wg.
- ► Each NC value represents the noise criterion which will not be exceeded by

the sound pressure in any of the octave bands, 2 through 7, for the cfm shown.

- ► Discharge NC is the noise criterion which will not be exceeded by terminal-generated noise transmitted along the downstream duct. Based on:
 - a. 10 dB room absorption, re 10⁻¹² watts.
 - b. 10" diameter, internally insulated discharge duct, 10 long.
 - c. One outlet, handling the per cent total air flow shown in the Unit Size column.
- ► Radiated NC is the noise criterion which will not be exceeded by noise

transmitted through the terminal casing walls. Based on:

- a. 10 dB room absorption,
- re 10'12 watts.
- b. Ceiling sound transmission class 35-39.
- c. Duct constructed of 22 gauge galvanized steel lined with 1", 4 lb. density, matted fiberglass.

Note: If the terminal is exposed, add 13 NC.

For some typical applications, please see the next page.

TITUS® Variable Volume Retrofit Terminals ➤ Applications

Model: PQCV ■ Applications

Low Pressure, Constant Volume Reheat System

Cold air from the central air handler is distributed through the original main trunk and branch ducts. The new TITUS PQCV retrofit terminals convert the system to variable air volume operation.

Each PQCV terminal is signaled by a direct acting thermostat. In the example shown in the diagram, the pressure independent minimum air flow is set at a thermostat output pressure of 8 psi or less, while the maximum is set at 13 psi or greater.

The existing reheat coil in each zone is actuated on a fall in room temperature, as the thermostat output decreases from 8 to 3 psi.

Multizone System

Hot or cold air from the central multizone air handler is distributed through the original zone ducts. The new TITUS PQCV retrofit terminals convert the system to variable air volume operation.

The multizone dampers provide a mixed air flow temperature of air at minimum air flow. The PQCV valves provide VAV and pressure independent flow. Very little work is required to convert a multizone pressure dependent set of zones to an energy saving series of VAV zones. Each zone now has fixed maximum and minimum air flow without system hunting.

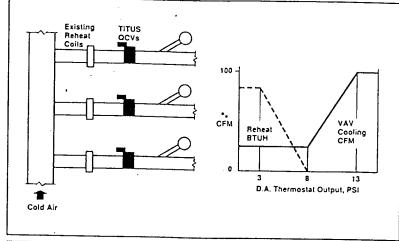
Dual Duct System

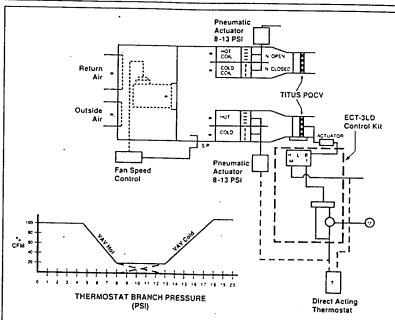
Hot and cold air from the central air handler is distributed through the original supply ducts and terminals. The new TITUS PQCV retrofit terminals convert the system to variable air volume operation.

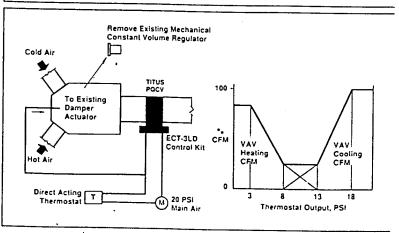
The mechanical constant volume regulator is removed from each existing terminal, while a PQCV is installed in the discharge duct. A direct acting thermostat controls both the PQCV and the modulating splitter damper in the existing terminal.

On a rise in room temperature, the PQCV reduces the hot air flow. At the minimum air flow setting, the damper in the existing unit, which in this example has an 8-13 psi actuator, begins to modulate, and some mixing occurs. A further temperature rise increases the cold air flow to the maximum.

Since the total air volume is reduced, the fan may need to be slowed down.







TITUS[®] Variable Volume Retrofit Terminals ➤ Applications

Dual Duct Applications ■ ECT-TI/TH, ECT-AN, ECT-BC, ECT-BU, ECT-CN, ECT-KR, ECT-TB

In Diagram A, the original dual duct terminal has been converted to single duct, cooling only, to serve an interior

Notice that the hot duct connection has been capped. The damper is normally closed with respect to the cold air duct. Since the main control air feeds directly into the existing damper actuator, the damper goes full open when the main control air is turned on. The TITUS ECT-3LS then provides pressure independent VAV control.

In Diagram B, the dual duct function is retained for use in an interior or exterior zone. The TITUS ECT-3LS provides pressure independent control for both cooling and heating. Cooling is variable air volume, while heating is constant air volume at the minimum cfm setting of the TITUS II controller. The original inlet damper modulates from 100% cold to 100% hot as the thermostat calls for more heat.

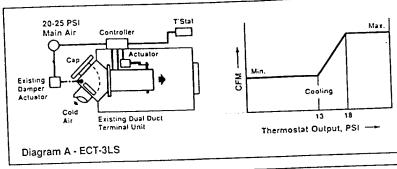
In Diagram C, the addition of a reversing relay and a high pressure selector allows pressure independent VAV control of heating, as well as cooling, in the dual duct unit.

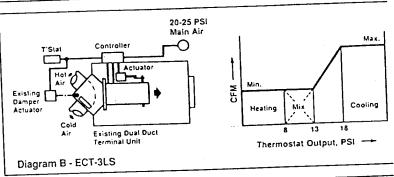
In this example the reversing relay bias is set at 10.5 psi. The TITUS ECT-3LD is set for minimum cooling cfm at 13 psi thermostat output pressure. From 13 to 8 psi the original dual duct unit damper modulates from 100% cooling to 100% heating, so that there is mixing at the minimum cfm. From 8 to 3 psi the TITUS control modulates from minimum to maximum heating cfm.

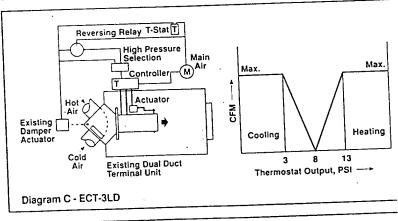
In Diagram D, the physical hookup is the same as in C, except for the addition of a snap acting diverting relay with its own air supply.

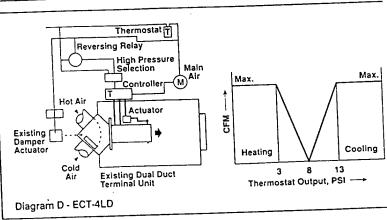
Here both the reversing relay bias and the ECT-4LD start point are set at 8 psi. The ECT-4LD is also set for a minimum ofm of zero. The original dual duct unit damper snaps from 100% cooling to 100% heating at 8 psi. Below 8 psi this damper remains in full heating position, while the TITUS control modulates from minimum to maximum heating ofm.

Note: For a typical single duct application for any internal retrolit valve kit, see page J24.









Century® Three Phase ● Integral Horsepower Motors

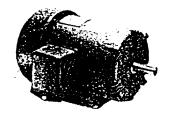
MagneTek

Squirrel Cage • Totally-Enclosed Fan-Cooled • Rigid Base • 3600, 1800 and 1200

1 thru 30 HP

"N" prefix motors manufactured in Lexington, Tennessee. "T" prefix catalog motors manufactured by MagneTek in Europe. Features: Ball Bearing • 60 HZ • 40° C Ambient • Class F Insulated • Service Factor 1.15 • Continuous Duty • NEMA Design B

Applications: Designed to stand up to abusive treatment . . . moist, dirty, dusty, and factory atmospheres.



DIMENSION DRAWING ON PAGE 69

HP	RPM	Volts	Frame	Fuil Load Amps	Power Factor	Efficiency	Shpg. Wt#	Cat. No.	List Price D-1
1	1800	230/460 575	143T	3.6/1.8	78.0	68.0	45	T164	\$ 210.00
	1200	230/460	143T 145T	1.4 5.2/2.6	78.0 56.0	68.0	45	T167	210.00
1 1/2	3600	230/460 575	143T	5.0/2.5		66.0 66.0	54 54	T198 T199	259.00 216.00
	1800	230/460	143T 145T	2.0 5.0/2.5	87.0 87.0	66.0	51	T196 T165	216.00
	1200	575	145T	2.0	78.0 78.0	74.0 74.0	58 50	T165 T168	227.00
	1200	208-230/460 230/460	S182T 182T	5.1-5.4/2.7 5.2/2.6	72.0 70.0	80.0	51 58 50 51 75	(2) N204	216.00 227.00 227.00 347.00 280.00
2	3600	230/460	145T	6.0/3.0	85.0	80.0 74.0	- 75 - 55	T264 T129	280.00
	1800	575 230/460	145T 145T	2.4 6.8/3.4	85.0	74.0	55 55	T197	252.00
	1200	575	145T	2.7	75.0 75.0	74.0 74.0	55 54 64	T166 T169	246.00 246.00
	1200	208-230/460 230/460	S184T 184T	6.4-6.0/3.0 6.6/3.3	78.0 72.0	82.5 82.5	64 84	(2) N205	252.00 252.00 246.00 246.00 368.00 311.00
3	3600	208-230/460	\$182T 182T	8.6-8.0/4.0		80.0	61	T265 (2) N202	311.00
		230/460 575	1821 S182T	7.8/3.9 3.3	90.5 90.0 90.5 90.0	82.5 80.0	88	T262	288.00
	1800	575 575 200-208	\$182T 182T	3.1	90.0	82.5 84.0	60 88	(2) N247 T272	345.00 288.00
	1000	208-230/460	\$182T \$182T	9.2 8.5-8.2/4.1	84.0 84.0 73.0	84.0 84.0	88 60 88 61 61 77	(2) N214	320.00
		230/460 575	1821	9.6/4.8	73.0	82.5 84.0	77	(2) N200 T247	320.00 286.00
	1000	575 575	\$182T 182T F213T	3.3 3.8	84.0 73.0	84.0 82.5	60 77	T247 (2) N234 T270	320.00 286.00
	1200	208-230/460 230/460	F213T 213T	10.2-10.0/5.0 9.0/4.5	84.0 73.0 67.0 78.0	82.5	83	N300	466.00
5	3600	208-230/460	L184T	13.2-12.0/6.0	88.3	84.0	119	T362 (2) N203	387.00
		230/460 575	184T L184T	13.2-12.0/6.0 12.0/6.0 5.0	88.3 92.0	85.5 85.5 85.5 86.5 86.5 84.0	79 99 79 99 84 84 90	(2) N203 T263 (2) N248	396.00 362.00 396.00
	1000	575	184T	4.8	88.3 92.0	85.5 85.5	79 9 9	(2) N248 T273	396.00
	1800	200-208 208-230/460	184T L184T L184T	15.0 14.3-13.0/6.5	83.0 83.0	86.5	84	(2) N215	362.00 364.00
		230/460 575	184T	13 6/6 B	184.0	84.0	90	(2) N201 T250	364.00 323.00
		575	L184T 184T	5.2 5.3 17.5-17.0/8.5	83.0 84.0	86.5	83 90	T250 (2) N235	364.00
	1200	208-230/460 230/460	184T F215T 215T	17.5-17.0/8.5	70.0	85.5	106	T271 N301	323.00 669.00
71/2	3600	208-230/460 230/460	S213T	15.0/7.5 20.5-18.6/9.3	77.0 89.0	85.0	147	T363	584.00
		230/460 575	S213T 213T F213T	18.0/9.0 8.5 7.0	93.0 88.5 93.0	87.5 86.5	105 121	(2) N302 T360	561.00 457.00
·	4000	575	2131	8.5 7.0	88.5 93.0	80.0 86.5	93	T360 (1)(4) N333	561.00
	1800	200-208 230/460	S213T S213T	23.0-23.0 21.0/10.5	81.2	82.4	130	T366 (2) N316 (2) N303	457.00 479.00
		230/460	213T	18.6/9.3	79.0 84.0	87.5 . 88.5	100 128	(2) N303 T345	479.00 436.00
		575 575	S213T 213T	8.4 7.3	79.0 84.0	88.5	105	(2) N321	479.00
	1200	230/460	213T S254T	23.0/11.5	73.0	88.5 86.5	121 93 121 130 100 128 105 128 220 220	T364 (2) N400	436.00 988.00
10	3600	230/460 208-230/460	254T S215T	20.0/10.0 25.0-24.8/12.4	80.0	88.5	220	(2) N400 T470	802.00
		230/460	215T	24.0/12.0	89.0 93.0	87.5 86.5	121 139 112 139	(2)(3) N304 T361	635.00 544.00
		575 575	F215T 215T	10.0	90.5 93.0	86.5 85.5 86.5	112	T361 (1)(4) N334	635.00
	1800	200-208 208-230/460	F215T F215T	29.0-29.0 28.0-25.6/12.8 24.8/12.4	85.5	87.5	139 110	T367 (1)(4) N317	544.00 587.00
		230/460	215T	28.0-25.6/12.8 24.8/12.4	85.5 85.5 85.0	87.5 88.5	110 158	N305	587.00
		575 575	F215T 215T	10.2	85.5	87.5	110	T348 (1)(4) N322 T365	519.00 587.00
	1200	. 230/460	F256T	9.9 28.0/14.0	85.5 85.0 76.0 80.0	88.5 88.5	158 228	T365 N401	519.00 1167.00
15	3600	230/460 230/460	2561	27.0/13.5		88.5	264	T471	986.00
	5500	230/460	F254T 254T	34.8/17.4 36.0/18.0	91.0 93.0	85.7 86.5 87.5 88.5 89.5	187	N402	944.00
	1800	575 230/460	254T S254T	15.2	86.0	87.5	209 209	T468 T474	762.00 762.00
		230/460	254T	37.0/18 5 36.0/18.0	86.0 89.0	88.5 89.5	216 233	(2) N403 T445	879.00
		575 575	F254T 254T •	16.0 14.0	81.3 89.0	86.4	193	(1)(4) N430	751.00, 879.00
	1200	230/460	284T	38.0/19.0	89.0 80.0	89.5 89.5	233 374	T472 T562	751.00 1349.00
				•					1349.00 00 page 13)

(continued on page 13)

Louis Allis Pacemaker® Three Phase Integral Horsepower Motors



Squirrel Cage • Totally-Enclosed Fan-Cooled • Rigid Base • 3600, 1800 and 1200 RPM 11/2 thru 400 HP

Features: Ball Bearing • 60 HZ • 40° C Ambient • Class F Insulated • Service Factor 1.15 • Continuous Duty • NEMA Design B

Applications: Designed to stand up to abusive treatment . . moist, dirty, dusty, and factory atmospheres.



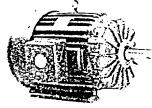
			ום	MENSION DRAWING ON PAG	iE 69			Cat.	List Price
				Full Load - Amps	Efficiency	Power Factor	Shpg. Wt.#	No	S 417.00
P	RPM	Volts	Frame	5.2/2.6	80.0	67.5	76	N283	465.00
1/2	1200	230/460	182T 184T	6 4/3.2	82.5	78.0	94	N274	430.00
	1200	230/460		8.2/4.1	80.0	90 5	79 77	N271	405.00 405.00
	3600	230/460 200-208	182T 182T	10.4/10.4	81.5 81.5 82.5	83.5 83.5	77	N270	536.00
	1800	230/460	1827	8 8/4.4	81.5 82.5	72.0	140	N373	519.00
	1200	230/460	182T 213T	9.6/4.8	81.5	920	97	N284 N281	451.00
	3600	230/460	184T	13.4/6.7	82.5	83.5	95 90	N280	451.00
	1800	200-208	184 <u>T</u>	15.5/15.5 14.0/7.0	82.5 82.5 85.5	83.5 70.0	169	N383	771.00
		230/460	184T 215T	17.0/8.5	85.5	700	140	N374	713.00 646.00
_	1200	230/460	2131	20 0/10.0	80.0	88 5 83 0	130	N371	646.00
11/2	3600	230/460 200-208	213T ·	22.1/21.7	86.5 86.5 86.5	830	130 130	N370 N473	1147.00
	1800	230/460	213Ť	19 6/9.8	86.5	72.0	249		780.00
	1200	230/460	254T	24.0/12.0	95.5	90.5	171	N384 N381	705.00
	3600	230/460	215T	25 0/12.5	85.5 87.5	85.5 85.5	171	N380	705.00
10	1800	200-208	215T	29.0/29.0 25.6/12.8	87.5	85.5	171 287	N483	1402.00
		230/460	215T	28.0/14.0	88 5	76.0		(4) N474	1088.00
	1200	230/460	256T	36 0/18.0	87.5 87.5 88.5	90.0	243 253 352	N470	1060.00 1866.00
15	3600	230/460	254T 254T	38 0/19.0	87.5	85 0 75 0	352	N573	
	1800	230/460 230/460	-284T	44 0/22.0	88.5	930	266	N484	1269.00 1261.00
	1200	230/460	256T	44.0/22.0	87.5 89.5 89.5	93 U 87.5	297	N480	2379.00
20	3600	230/460	256T	48.0/24.0	89.5	790	372	N583	1589.00
	1800 1200	230/460	286T	55 0/27 5	07.5	90.5	346	N574	1470.00
	3600	230/460	284TS	60 0/30 0	87.5 89.5 88.3	87.0	344	N570 N602	2448.00
25	1800	230/460	284 <u>T</u>	60 0/30 0 72 0/36 0	88.3	73.6	455	N584	1829.00
	1200	230/460	324T	70.0/35.0	87.5	93.0	394 399	N580	1737.00
30	3600	230/460	286TS	70.0/35.0	90.2 90.2	88.5 77.0	550	N603	2701.00
30	1800	230/460	286T 326T	82 0/41 0	90.2	17.0	506	N620	2262.00
	1200	230/460		94.0/47.0	87.5	91.0 86.5 86.5	434	N600	2208.00 2208.00
40	3600	230/460	324TS 324T	97 0/47.5	91.7	80.5 96.5	434	N606	4291.00
	1800	230/460 575	324T	38.0	91.7 89.1	87.6	650	N704	2912.00
	1200	230/460	364T	96.0/48.0	88.5	940	552	(4) N621	2506.00
	3600	230/460	326TS	116.0/58.0	92.4	89.0 89.0	521	N601 N607	2506.00
50	1800	230/460 575	326 <u>T</u>	120 0/60.0 46.0	92.4	89.0	521 690	N705	4683.00
	1000	575	326 <u>T</u>	122.0/61.0	92.4	83.0	1245	N757	6968.00
	1200	230/460	365T 404T	128.0/64.0	91.7	82.0	740	N687	4015.00
	900_	230/460	22.70	136.0/68.0	90.2	920	770	N700	3851.00 3851.00
60	3600	230/460		140.0/70.0	91.0	89.0 89.0	777	N685	5769.00
	1800	230/460 575	364T	56.0	91.0 89.3	85.0	1213	N752 N756 _	7198.00
	1200	230/460	0 404T	150.0/75.0 150.0/75.0	91.7	84.0	1290	N688	5228.00
	900	230/460	4051		92.4	930	685	N701	4621.00
75	3600	230/460	365TS	164.0/82.0 168.0/84.0	93.0	90.0	865	• N684	4621.00
15	1800	230/469	3651	67.0	93.0	90.0	887 1353	N753	6521.00 9746.00
		575	365T 0 405T	174.0/87.0	93 0	89 0 83.0	1555	(4) N849	
	1200 900	230/46 230/46	~	182.0/91.0	93.6	93.0	1290	N755	6846.00 6234.00
				230 0/115.0	89.5	930	1132	(4) N751	6234.00
100	3600	230/46 230/46	n 405T	230.0/115.0	91.7 91.7	91.5 91.5	1132	(4)∳ N750 N830	8697.0
	1800	575	405T	92.0 224.0/112.0	93.0	91.0	1707	(1)(4)• N848	12526.0
	1200	230/46	o 444T	1200	93.0	84.0	1738	(2)(4) N846	9217.0
	900	460	4451		89.5	960	1775	(2)(4) N828 (2) N828	7980.0
125		460	444TS	140.0 142.0	91.7	91.0	1630 1605	N850	7980.0
123	1800	460	444T	114.0	91.7	91.0	1878	(2) N832	10633.0
		575	444T 445T	154.0	94.1	83.0	1070	lcon	tinued on page 15
	1200	460	4471					\co	



Premium Efficiency Squirrel Cage • TEFC • Rigid Base • 3600, 1800 & 1200 RPM 1-400 HP

Features: Premium Efficiency • All Cast Iron Construction • 1.15 Service Factor • Class F Insulated • Continuous Duty • 60 HZ • Corrosion Resistant Fan • Multiple Dips and Bakes Non Hygroscopic varnish • Plated Hardware • Shielded Bearings • Shaft Slinger • Automatic Drain/ Breather • Fully Gasketed Conduit Box • Stainless Steel Nameplate • Regreasable While Running • Grease Fittings • Ground Lug in Conduit Box • Provision for mounting "Inproseal" (360 Frame and larger). 3 Year Warranty.





			mounu 3 Year	Warranty.		,	MEE		
MENSION E	DRAWING ON PA	GE 59		Full Load	Efficiency	Power Factor	Shpg. Wil #	Cat. No.	List Price D-1
19	RPM	Volts	Frame	3 2/1.6	78.5	78.0	49	(3) A S107 (3) A S110	S 289.00 357.00
1	1800 1200	230/460 230/460	143T 145T	4 0/2.0	72.0 72.0	88 0	<u>66</u> 50	A S111	294.00 302.00
1/2	3600	230/460 230/460	143T 143T	4.4/2.2 4.4/2.2	81.5 800	80 0 62 0	50 60 100	(3) A \$108 \$206	549.00 347.00
	1800 1200	230/460	182T	6.0/3.0 5.8/2.9	77 0	87.0	60 60	▲ \$112 ▲ \$109	323.00
2	3600 1800	230/460 230/460	145T	6 0/3 0 6.3/3 15	81.5 82.5	78.0 71.0	115	\$207	597.00 399.00
	1200 3600	230/460 230/460	184T 182T	8 0/4 0	840	83.0 75.5	87 82	▲ \$208 ▲ \$204 \$305	383.00 764.00
3	1800	230/460 230/460	182T 213T	8 8/4 4 9 0/4 5	85.5 86.5	69.7 90.5	172	▲ S209	485.00 453.00
5	1200 3600	230/460	184T 184T	12 0/6 0 13 4/6 7	86 5 85 5	82.0 74.1	100 200	▲ \$205 \$306	919.00
-	1800 1200	230/460 230/460	215T	14 5/7 25 18 0/9 0	87.5 88.5	83.4	:72 172	\$307 \$303	919.00
71/2	3600 1800	230/460 230/460	213T 213T	19 0/9 5 22 0/11 0	87.5 90.2	82 1 71.0	296	S442 S308	1416.00
	1200	230/460 230/460	254T 215T	23.0/11.5	90.2 89.5	89.9 85.2	200 200	\$304 \$443	1078.00 1729.00
10	3600 1800	230/460 230/460	215T 256T	25 0/12 5 28 0/14 0	90 2	85 2 74.5	383	\$444	1372.00 1350.00
15	1200 3600	230/460	254T 254T	35 0/17.5 36 0/18.0	91.7 91.0	88.3 87.0	296 296 451	\$440 \$502	2408.00
13	1800 1200	230/460 460	284T	200	92.4 92.4	76.0 90.0	386	\$445 \$441	1698.00 1682.00
20	3600	230/460 230/460	256T 256T	45 0/22 5 47.0/23 5	91.7 92.4	88.0 82.0	388 514	\$503	2795.00
	1800 1200	460	286T 284TS	25 0 30 5	92.4 93.0	82.8	460 460	S504 S500	2000.00 3406.00
25	3600 1800	460 460	284T 284T 324T	28.5 · 31.0	93.0 93.0	0.63 0.08	705 514	\$602 \$505	2448.00
	1200 3600	460 460	286TS	335	93.0 93.0	91.0 89.0	51.4	\$501 \$603	2325.00 3924.00
30	1800	460 460	286T 326T	38.0 34.0	93.0	79.4 84.2	756 705	S604	3244.00 3105.00
40	1200 3600	460	324TS 324T	43.5 47.0	94.1 93.6	80.1 82.0	705 8∔0	\$600 • \$678	5318.00
	1800 1200	460 460	364T	50 0 59 0	93.6 94.1	84.2	756	S605 S601	4196.00 3812.00
50	3600 1800	460 460	326TS 326T	61.0	94.1 93.6	81.7 81.0	75ô 910	• \$679 \$680	6105.00 5521.00
	1200	460	365T 364TS	63 0 66 0	94.1	92.0 89.0	840 840	(1) S676	5472.00 7154.00
60	3600 1800	460 460	364T 404T	67.0 72.0	94.1 94.1	83.0	1120 910	(1) S681	6932.00
75	1200 3600	460 460	365TS	80 0 83 0	94.5 94.5	93.0 90.0	910 910 1403	(i) \$677 • \$753	6936.00 8423.00
15	1800 1200	460 460	365T 405T	90.0	94.1	84.0 93.5	1403	S754	9289.00 8572.00
100	3600	460	405TS 405T	109.0 114.0	95.0	83.0 84.0	1403 1760	(1) \$751 • \$828	11511.00
	1800 1200	460 460	444T 444TS	123.0	95.0 95.0	93.0	1760 1760	• S830 S826	11284.00
125	3600 1800	460 460	444T	140.0 152.0	95.4 95.0	89.0 83.0	2050	• \$829 • \$831	14139.00 14587.00
	1200_	460 460	445TS	159.0	95.0 95.4	96.0 90.0	2050 2050	\$827 • \$881	12452.00 15817.00
150	3600 1800	460 460	445T 447T	165.0 177.0	95.0	84.0	2200 2200	• S886	18450.00 15954.00
200	1200 3600	460	447TS	212.0 220.0	95.0 95.4	95.0 90.0	2200 2500	(1) \$876 • \$882	19364.00
200	1800 1200	460 460	447T 447T	232.0	95.0 95.8	85.0 93.0	2200 2200	• S887 • S877	23269.00 20015.00
250		460 460	447TS 447T	263.0 279.0	95.8	89.0 84.0	2200 2500_	• S883	22112.00
	1200	460	449T 449TS	<u>292.0</u> 315.0	95.4 95.8	93.0	2500 2500	• \$888 • \$878	22702.00
300	1800	460 460	449T	325.0 340.0	95.8 95.0	91.0 85.0	2500	• \$884 • \$889	26533.00 33870.00
	1200	460 460	449T 449TS	368.0	95.8 95.8	93.0 91.0	2500 2500	• S879	24731.00 33675.00
350	1800	460	449T 449T	375.0 410.0	95.0	85.0	2500 2500	(2)• \$885 • \$890	38496.00
400	1200 3600	460	44915		95.8 95.8		2500	(2)• \$880	31555.00
400	1800		4491	(3)—Totally Enclos			ally stocked A-	Not domestically manufa	actored

Notes: (1)—NEMA Design A. (2)—1.0 Service Factor. (3)—Totally Enclosed Non-Ventilated

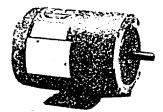
-Not normally stocked
-Not domestically manufactured

Three Phase • TENV & TEFC • Rigid Base • 1800 & 1200 RPM

1/4 thru 5 HP

Features: Ball Bearing • 60 HZ • 40° C Ambient • Class B Insulated • Reversible • Energy Efficient • NEMA Design B

Applications: Especially designed for use with Adjustable Speed Controls



Fractional HP Inverter-Duty

DIMENSION DRAWING ON PAGE 70

HP	RPM	Volts	Frame	Enclosure	Service Factor	Full Load Amps	Shpg: Wt#	Cat. No.	C-7A
			B56C	TENV	1.00	1.2-1.1/.55	20	E183	\$214.00
· 1/4	1800 1200	208-230/460 208-230/460	H56C	TENV	1.00	1.3-1.2/.6	21	E184	330.00
1/3	1800 1200	208-230/460 208-230/460	H56C J56C	TENV TENV	1.00 1.00	1.2-1.2/.6 1.7-1.6/.8	22 25	E182 E185	222.00 346.00
1/2	1800	208-230/460	J56C J56C	TENV TENV	1.00	1.6-1.8/.9 2.1-2.0/1.0	25 29	E181 E186	268.00 374.00
3/4	1200 1800 1200	208-230/460 208-230/460 208-230/460	K56C J56C	TENV TEFC	1 00 1 00	2.3-2.2/1.1 3.1-3.1/1.55	30 33	E180 E187	294.00 384.00

Integral HP Inverter-Duty

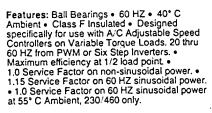
HP	RPM	Volts	Frame	Enclosure	Service Factor (1)	Full Load Amps	Efficiency	Power Factor	Shpg. Wt#	Cat. No.	List Price D-1
	dard Brack										
Stant			LAADT	TEFC	1.15	2.7/1.35	82.5	84.0	38	E120	\$342.00
1	1800	230/460	L143T			5.58/2.79	84.0	80.0	49	E116	446.00
2	1800	230/460	P145T	TEFC	1.15				62	E292	520.00
3	1800	230/460	F182T	TEFC	1.15	7.6/3.8	86.5	85 5			
5	1800	230/460	F184T	TEFC	1.15	12.4/6.2	87.5	86.5	72	E293	594.00
NEM	A "C" Bra	cket	7								
- INC.			M143TC	TEFC	1.15	2.7/1.35	82.5	84.0	39	E140	\$441.00
1	1800	230/460				5.58/2.79	84.0	80 0	49	E113	515.00
2	1800	230/460	P145TC_	TEFC	1.15					E236	687.00
3	1800	230/460	F182TC	TEFC	1.15	7.6/3.8	86.5	85.5	73		
5	1800	230/460	F184TC	TEFC	1.15	12.4/6.2	87.5	86.5	85	E237	814.00

Notes: (1)—Service Factor 1 0 when used on non-sinusoidal voltage wave forms.

Variable Volume **Inverter-Duty Motors** Three Phase

Dripproof • Rigid Base • 1800 RPM

1 thru 150 HP





DIMENSION DRAWING ON PAGE 69

HP	RPM	Volts	Frame	Efficiency	Power Factor	Full Load Amps	Shpg. Wt.≄	Cat. No.	List Price D-1
-	1800		N143T	82.5	84.0	3.0-2.7/1.35	38	(1)+ E188	
1		208-230/460	P145T	84.0	85.7	5.4-5.2/2.6	42	(1)+ E190	431.00
2	1800			85.5	89.0	14.6-12.6/6.3	91	E281	483.00
5	1800	208-230/460	E184T				132	E380	
71/2	1800	208-230/460	D213T	89 5	86.5	21.0-18.8/9.4			
10	1800	208-230/460	H215T	89.5	85.0	28.0-25.0/12.5	147	E38	
15	1800	208-230/460		91 7	880 .	40.0-36.0/18.0	230	E480	
				91.0	87.0	54.0-48.0/24.0	220	E48	1402.00
20	1800	208-230/460					311	E580	1647.00
25	1800	208-230/460	E284T	93.0	88 5	64.0-58.0/29.0			
30	1800	208-230/460	S286T	93.0	90.5	75.0-68.0/34.0	352	E58	
40	1800	208-230/460		93 6	88.0	102.0-92.0/46.0	450	E68	
	1800	208-230/460		93.0	89.5	128.0-114.0/57.0	509	E68	2966.00
50				94.1	90.5	67.0	796	(2) E68	3720.00
60	1800	460	364T					(2) E68	
75	1800	460	365T	94.5	900	83.9	825		
100	1800	460	404T	95.4	86.0	114.1	1000	• (2) E78	
125	1800	460	405T	95.4	88.0	139.4	1153	• (2) E78	
			444T	95.0	87.5	172.0	1236	• (2) E88	9232.00
150	1800	460	4441	930	U1.J	112.0		<u> </u>	

Notes: (1)—Class E insulated

(2)—Six lead motor suitable for part winding start

Not Normally Stocked.

+ —Item to be discontinued after present stock is depleted

Energy Efficient • Three Phase

Dripproof & Totally-Enclosed Fan-Cooled • Rigid Base • 1800 RPM 3 thru 200 HP

Features: Ball Bearings • 60 HZ • 40° C Ambient • Service Factor 1.15 • NEMA Design B • 3 Year Warranty

Applications: Fans, Blowers, Pumps, etc. that require the highest values in Efficiency and Power Factor





Dripproof • Class B Insulation

DIMENSION DRAWING ON PAGE 69

								• • •	>
НР	RPM	Volts	Frame	Efficiency	Power Factor	Full Load	Sapg.	Cat.	List Price
3	1800	200	E182T	89.5	85.5	Amps 8.5	₩€# 84	No.	D-1
5	1800	230/460	E182T	89.5	85.5	7.4/3.7	83	(1) E216 (1) E217	\$ 420.00 420.00
	1000	230/460	E184T E184T	89.5 89.5	88.0 88.0	136	93	(1) E218	483.00
71/2	1800	200	D213T	91.7	82.0	11.8/5.9 21.4	92	(1) E219	483.00
10	1800	230/460	D213T	91.7	82.0	18.6/9.3	141 135	(1) E316 (1) E317	654.00 654.00
10	1800	200 230/460	D215T D215T	91.0	85.0	27.8	155	(1) E318	727.00
15	1800	200	G254T	91.0	85.0	24.2/12.1	155	(1) E319	727.00
		230/460	Ğ254T	91.7	86 0 86 0	41.0 36.0/18.0	209 217	(1)(2) E450	1162.00
20	1800	200	G256T	92.4	87.0	55.0	232	(1) E451 (1)(2) E452	1162.00
25	1800	230/460	G256T	92.4	87.0	48.0/24.0	245	(1) E452 (1) E453	1318.00 1318.00
		230/460	284T · 284T	93.6 93.6	87.5 87.5	65.8	310	(1)(2) E513	1647.00
30	1800	200	286T	94.1	88.5	57.2/28.6	309	(1) E514	1647.00
40	1000	230/460	286T	94.1	88.5	77.5 67.4/33.7	373 355	(4) E515 E516	1934.00 1934.00
40	1800	200 230/460	E324T E324T	94.5	89.0	102.4	410	(1)(2) E624	2543.00
50	1800	200	S326T	94.5	89.0	89.0/44.5	409	(1) E625	2543.00
		230/460	S326T	94.5 94.5	88.5 88.5	130.0	414	(2) E626	2966.00
30	1800	460	- Y364T	95.4	87.0	112.0/56.0 67.0	411	E627	2966.00
75	1800	460	Y365T	95.4	87.0		550	(1)(2) E716	3720.00
00	1800	460	Y404T	95.4	87.0	84.6	838	(1)(2) E717	4431.00
25	1800	460	D405T	95.4	88.0	1140	1019	(2) E751	5901.00
50	1800	460	444T	95.8		1390	1105	(2) E752	7004.00
200	1800	460	445T	96.2	85.5	171.5	1306	• (2) E846	9232.00
Cotally	-Enclosed F	an-Cooled • (Naac 5 1	30.2	86.0	226.0	1483	• (2) E847	11470.00

sed Fan-Cooled • Class F Insulation

НР	RPM	Volts	Frame	Efficiency	Power Factor	Full Load Amps	Shpg. Wt.#	Cat. No.	Lis: Price
3	1800	200 230/460 575	182T 182T 182T	88.5 88.5 88.5	85.5 85.5	9 0 7.8/3.9	91 89	• E252 E253	S 477.00 477.00
5	1800	200 230/460 575	184T 184T 184T	89.5 89.5 89.5	85.5 88.0 88.0	3.1 13.8 12.0/6.0	92 99 107	E254 • E255 E256	477.00 550.00 550.00
71/2	1800	200 230/460 575	213T 213T 213T 213T	91.0 91.0 91.0	88.0 84.5 84.5	4.8 21.6 18.8/9.4	109 183 153	• E350 • E350 E351 E352	550.00 748.00
10	1800	200 230/460 575	215T 215T 215T 215T	91.0 91.0 91.0 91.0	84.5 85.0 85.0	7.5 27.8 24.8/12.4	168 180 189	• E353 E354	748.00 748.00 841.00 841.00
15	1800	200 230/460 575	254T 254T 254T 254T	91.7 91.7 91.7 91.7	85.0 86.0 86.0 86.0	9.7 41.0 36.0/18.0	280	•(1)(2) E460 (1) E461 (1) E462	841.00 1284.00 1284.00
20	1800	200 230/460 575	256T 256T 256T	93.0 93.0 93.0	86.5 86.5 86.5	14.5 53.8 46.8/23.4	305	•(1)(2) E463 (1) E464	1284.00 1455.00 1455.00
25	1800	200 230/460 575	284T 284T 284T	93.0 93.0 93.0	88.0 88.0 88.0	18.7 65.5 57.0/28.5	366	(1) E465 •(1)(2) E549 (1) E550	1455.00 1905.00 1905.00
30	1800	200 230/460 575	286T 286T 286T	93.6 93.6 93.6	89.0 89.0 89.0	22.8 74.0 67.4/33.7	366 429 429	(1) E551 •(2) E556 E552	1905.00 2262.00 2262.00
40	1800	230/460 575	324T 324T	94.1 94.1	89.0 89.0	26.9 89.0/44.5 35.6	425 502 509	E553 (1) E628 E629	2262.00 2745.00 2746.00
50 60	1800	230/460 575 460	326T 326T 364T	94.1 94.1	89.0 89.0	112.0/56.0 45.0	565 552	E630 E631	3381.00 3381.00
75	1800	575 460	364T 365T	94.1 94.1 94.5	89.0 89.0 90.0	67.0 54.0 82.5	840 850 900	(1)(2) E720 (1) E721 (1)(2) E722	5027.00 5027.00
100	1800	575 460 575	365T 405T ·- 405T	94.5 95.4 95.4	90.0 86.0 86.0	66.0 111.0	875 1391	(1)(2) E722 (1) E723 (2) E753 E754	5760.00 5760.00 7951.00
125	1800	460 575	444T 444T ·	95.4 95.4	89.0 89.0	91.0 139.5 111.6	1400 1709 1705	(1)(2) E835	7951.00 10719.00
150 200	1800	460	445T	95.8	90.0	166.0		(1) E836 (1)(2) E843	10719.00
	1800 NEMA Design A.	460	447T	95.8	90.0	215.5		(1)(2) E845	15689.00

es: (1)—NEMA Design A. (2)—Six lead motor suitable for part winding start. • —Not Normally Stocked.

Century E-plus® Motors

Energy Efficient • Three Phase

Totally-Enclosed Fan-Cooled • Rigid Base • 3600, 1800 and 1200 RPM

1 thru 150 HP

Features: Ball Bearings • 60 HZ • 40° C Ambient • Class B Insulated • Service Factor 1.15 • NEMA Design B

Applications: Designed for continuous duty, constant torque applications such as fixed-speed fans, blowers, compressors, and conveyor motors that are fully loaded most of the day.



DIMENSION DRAWING ON PAGE 69

		· Contro	DIMENS	ON DRAWING ON PAGE 6	9				
	RPM	Volts	Frame	Full Load Amps	Efficiency	Power Factor	Shog. Wt. =	Cat. No.	List Price D-1
HP	1800	200	L143T	31	82.5	84.0	36	(1) E123 (1) E120	\$ 342.00 342.00
1	1800	230/460 575	L143T L143T	2.7/1.35 1.08	82.5 82.5	84.0 84.0	9666 9666	(1) 5126	342.00
11/2	1800	200	M145T	4.5	84.0	85.7 85.7	43 46	(1) E124	374.00 374.00
1 72	1800	230/460	M145T M145T	3 9/1.95	84.0 84.0	85.7 85.7	43	(1) E121 (1) E127	374.00 374.00
	1200	575 230/460	182T	1.56 4.8/2.4	84.0	70.0	83	E244	525.00 408.00
2	1800	200	M145T	61	84.0 84.0	84.1 84.1	43 43	(1) E125 (1) E122	408.00
_		200 230/460 575	M145T M145T	5 3/2.65 2.12	84.0	84.1	43 42 45 96	(1) E125 (1) E122 (1) E128 E245	408.00 586.00
	1200	230/460	184T	6.4/3.2	85.5	68.4		F240	482.00
3	3600	230/460	182T	7.8/3.9 8.8	82.5 86.5	92.0 85.5	83 69 70	(1) E222	443.00
	1800	200 230/460	\$182T \$182T	· 7.6/3.8	86.5 86.5 88.5	85.5	70	(1) E220 (3)(5) E253	443.00° 477.00
		230/460	182T	7 8/3.9 10.6/5.3	88.5 86.5	85.5 85.5 85.5 63.0	é9 150	E342	717.00
	1200	230/460. 230/460	213T 184T	12.4/6.2	85.5	88.3 88.0	97	E241 (1) E223 (1) E221	594.00 511.00
5	3600 1800	200	L184T	147	85.5 .86.5 .86.5 .89.5 .87.5	88 0 88.0	85 86 107	(1) E223 (1) E221	511.00
		230/460 230/460	L184T 184T	12.8/6.4 12.0/6.0	89.5 89.5	88 0 66 8	107	(3)(5) E256	550.00 1001.00
	1200	230/460	215T	16 6/8.3	87.5		133	E343 E336	778.00
71/2	3600	230/460	213T F213T F213T	18.9/9.4 21.4	86 5 88 5 88 5 91 0	86 4 85 3	149 107	E322	696.00
	1800	200 230/460	F2131 F213T	18 6/9 3	88.5	85.3 85.3 84.5	105	E320 (3)(5) E351	696.00 748.00
		230/460	2131	18 8/9 4 22 0/11.0	91.0 89.5	84.5 74.0	105 153 250	(3)(5) E351 E442	1378.00
	1200	230/460	254T		87.5	90.0	188	E337	912.00
լ10	3600 1800	230/460 200	215T F215T F215T	24.2/12.1 29.0 25.0/12.5	89.5	88.0	186 124 124 189 310	E323 E321	782.00 782.00
	1000	230/460	F215T	25.0/12.5 24.8/12.4	89.5 91.0	83.8 85.0	159	(3)(5) E354 • E443	841.00
	1200	230/460 230/460	215T 256T	28.0/14.0	89.5	75.0	310	• E443 E436	1697.00 1279.00
15	3600	230/460 200	254T G254T S254T	34.8/17.4	88.5 91.0	91.2 86.2 88.5 86.0 72.8	251 225	E422	1194.00
	1800	200 230/460	G2541 S254T	41.2 36 0/18.0	90.2 91.7	88.5	212	(1) Ē420 (3)(4)(5) Ē461	1194.00 1234.00
		230/460	2541	36.0/18.0	91.7 90.2	86.0 72.8	212 230 353	(3)(4)(5) E461 • E535	2325.00
	1200	230/460	284T 256T	42.8/21.4 45.0/22.5		93.5	293	E437	1582.00 1353.00
20	3600 1800	230/460 230/460	S256T	48.0/24.0	90.2 91.7	93.5 88.0 86.5	254 205	(1) E421 (3)(4)(5) E464	1455.00
		230/460	256T 286T	46.8/23.4 54.8/27.4	93.0 91.7	76.0	298 254 305 404	```	2741.00
<u> </u>	1200 1800	230/460	284T	60.0/30.0	92.4 93.0	85.0	332 366 501	E554 (3)(4)(5) E550	1715.00 1905.00
25		230/460 230/460	284T	57.0/28.5	93.0 91.7	88.0 80.0	300 501	• E614	3181.00
	1200	230/460	324T 286T	64.0/32.0 69.0/34.5	924	88.5	384	E555 (3)(5) E552 • (4) E615	2039.00
30	1800	230/460 230/460	286T	69.0/34.5 67.4/33.7	93.6 92.4	89.0	429 539_	(3)(5) E552 • (4) E615	2262.00 3570.00
	1200	230/460	326T	76.0/38.0 91.0/45.5	93.0	80.0 89.5	471	E620	2471.00
40	1800	230/460 230/460	324T - 324T	91.0/45.5 89.0/44.5	94.1	89.0	502	(3)(4)(5) E628 • E710	2746.00 4856.00
	1200	230/460	364T	101.0/50.5	93.6	80.0	685 536	E622	3043.00
50	1800	230/460	326T	113.0/56.5 112.0/56.0	93.0 94.1	89.0 89.0	565	(3)(5) E630	3381.00
	1200	230/460 230/460	326T 365T	126.0/63.0	93.6	81.0	710_	• E711	5620.00 5027.00
60	1800	460	364T	67.0	94.1	89.0 83.0	840 1000	(2)(3)(4)(5) E720 • E747	6704.00
	1200	230/460	404T	148/74.0 82.5	93.6 94.5	90.0	900	(2)(3)(4)(5) E722	5760.00
75	1800 1200	460 230/460	365T 405T	178.0/89.0	94.5	84.0	1359	(2)(3)(5) E753	7825.00 7951.00
100	1800	460	405T 444T	111.0 236.0/118.0	95.4 94.1	86.0 86.0	1391 1667	• E829	10971.00
125	1200 1800	230/460 460	444T	139.5	95.4	89.0	1709 1890	(2)(3)(4)(5) E835 • (2) E830	10719.00 13090.00
	1200	460	445T 445T	147.0 166.0	95.0 95.8	85.0 90.0	1891	(2)(3)(4)(5) E843	11966.00
150	1800 1200	460 460	4451 445T	175.0	95.8 95.0	86.0	1922	• (2) E844	14418.00

Notes: (1)—Steel Frame design.

(2)—Six lead motor suitable for part winding start.

(3)—Class F Insulated—Cast Iron Motors only.

(4)—NEMA Design A.

(5)—E-plus III motors

— Not Normally Stocked.

*YORK®

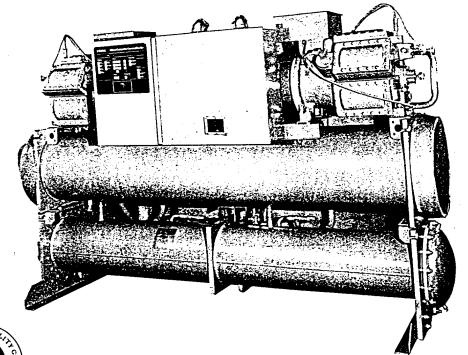
RecipPak™

LIQUID CHILLERS WATER COOLED & REMOTE CONDENSER MODELS

R-22

60 TO 250 TONS (50 & 60 HZ.)









MODELS YCWZ33AB0—YCWZ99HD0 & YCRZ33A00—YCRZ99H00 (STYLE A)
MODELS YCWJ45EE0—YCWJ99MJ0 & YCRJ45E00—YCRJ99M00 (STYLE A)
ENGINEERING GUIDE



Ratings - Part Load (YCWZ Models)

WATER COOLED - 60 HZ - STANDARD UNLOADING STEPS

	YCW	YCWZ33AB0				
% DISPL.	ENT, COND. WATER TEMP. °F	TONS	ĸw	EER		
100.0	85.0	59.1	49.6	14.3		
75.0	79.7	46.5	35.5	15.7		
50.0	74.1	33.4	22.5	17.8		
50.0	73.1	30.8	21.4	17.3		
25.0	67.4	17.4	10.2	20.5		

% DISPL.	ENT. COND. WATER TEMP. °F	TONS	ĸw	EER
100.0	85.0	65.9	56.2	14.1
75.0	79.8	52.1	40.4	15.5
50.0	74.4	37.9	25.6	17.8
50.0	73.0	34.2	24.4	16.8
25.0	67.5	19.7	11.6	20.4

ENT. COND.								
WATER TEMP. °F	TONS	ĸw	EER					
85.0	78.7	66.0						
80.1	63.5	49.5	15.4					
76.2	51.1	35.9	17.1					
74.2								
70.1								
	TEMP. °F 85.0 80.1 76.2 74.2 70.1	TEMP. °F 85.0 78.7 80.1 63.5 76.2 51.1 74.2 44.7	TEMP. °F 66.0 85.0 78.7 66.0 80.1 63.5 49.5 76.2 51.1 35.9 74.2 44.7 33.0 70.1 31.9 20.8					

	YCW	Z77CC0			
% DISPL.	ENT. COND. WATER TEMP. °F	TONS	ĸw	EER	
100.0	85.0	85.5	73.8		
83.3	81.5	73.7	59.5	14.9	
66.7	78.0	61.7	45.6	16.3	
50.0	73.0	44.4	32.1	16.6 19.0	
33.3	69.4	32.0	20.2		
		16.2 EER	·		

YCWZ88CC0									
% DISPL.	ENT. COND. WATER TEMP. °F	TONS	ĸw	EER					
100.0	85.0	98.0	89.8	13.1					
83.3	81.7	81.7 85.1		14.1					
66.7	78.4	72.3	55.6	15.6					
50.0	72.8	50.2	39.8	15.1					
33.3	69.5	37.2	24.9	17.9					
	IPLV	15.2 EER							

YCWZ88HD 0									
% DISPL.	ENT. COND. WATER TEMP. °F	TONS	ĸw	EER					
100.0	85.0	105.3	91.6						
83.3	81.5	90.6	73.6	14.8					
66.7	78.0	75.8	56.2	16.2					
50.0	73.0	54.7	39.9	16.5 19.0					
33.3	69.4	39.5	25.0						
	IPLV	16.1 EER							

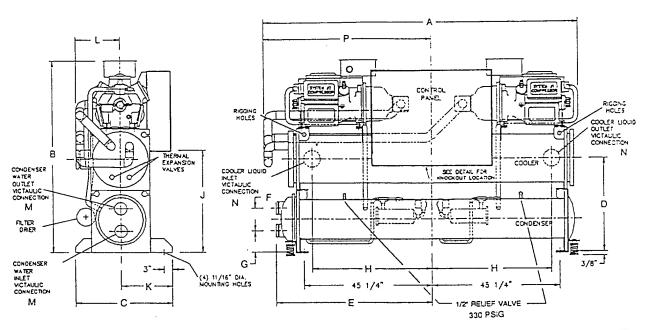
	YCW	Z89HD0			
% DISPL.	ENT. COND. WATER TEMP. °F	TONS	кw	13.5 14.7 15.9 16.6	
100.0	85.0	111.1	98.8		
82.0	81.4	95.2	77.9		
66.7	78.1	80.4	60.7		
46.1	72.2	54.4	39.4		
30.7	68.8	39.2	24.6		
	IPLV	15.9 EER			

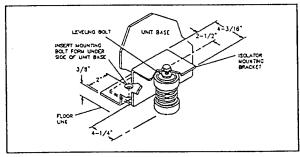
	YCW	Z99HD0			
% DISPL.	ENT. COND. WATER TEMP. °F	TONS	кw	EER 13.2	
100.0	85.0	116.9	106.4		
83.3	81.6	101.0	85.7	14.1	
66.7	78.2	85.2	65.4	15.6	
50.0	72.9	60.1	47.1	15.3	
33.3	69.5	44.2	29.2	18.1	
·	IPLV	15.3 EER			

SHADED RATINGS CERTIFIED IN ACCORDANCE WITH ARI STANDARD 590-92.

Ratings for optional unloading steps can be obtained from your local York sales representative

Dimensions (Water Cooled — YCWZ Models)





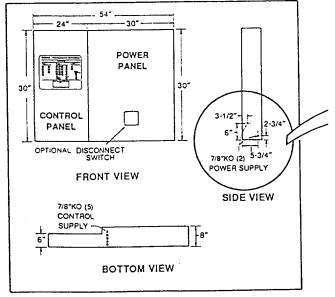
VIBRATION ISOLATOR MOUNTING DETAILS

1. CLEARANCES - Minimum YORK Required Clearances to Service the Units as Follows:

Rear to Wall: 2'0" Front to Wall: 2'6"

Top: 2'0"
Tube Cleaning & Removal: 8'0" (Either End)

- 2. WEIGHTS (LBS.) See Physical Data Total Unit Weight Equally Distributed at 4 Mounting Holes
- 3. Vibration Isolators will Increase Overall Height of Unit by Approximately 3/8".

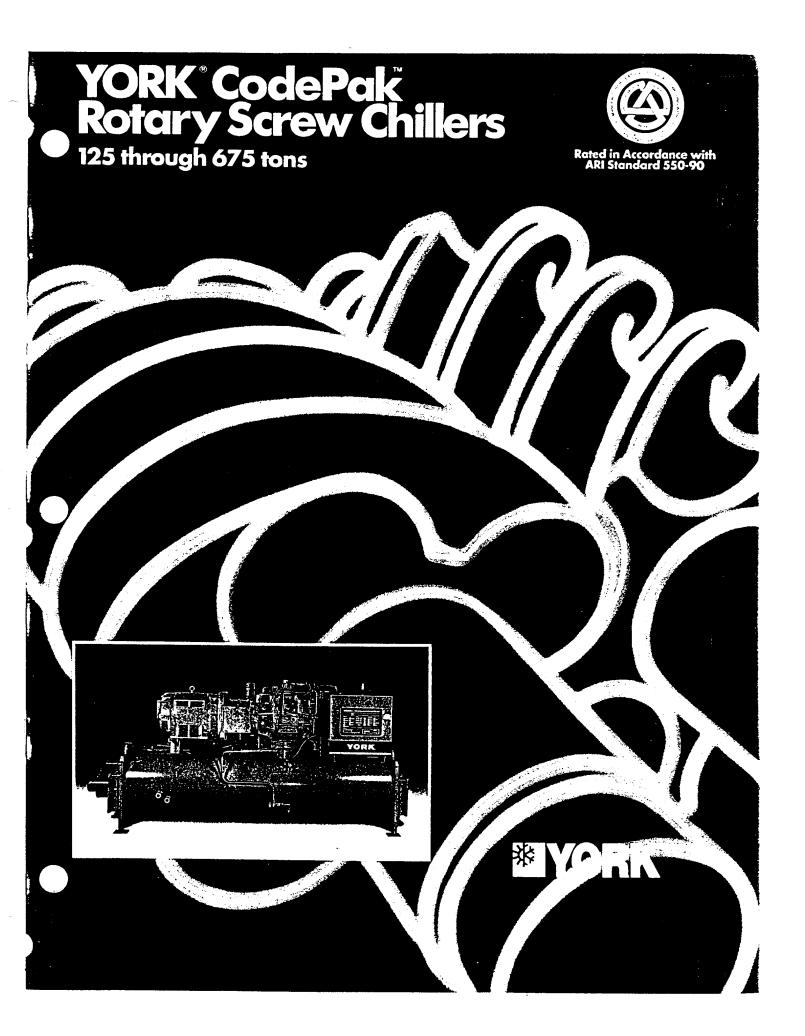


CONTROL PANEL

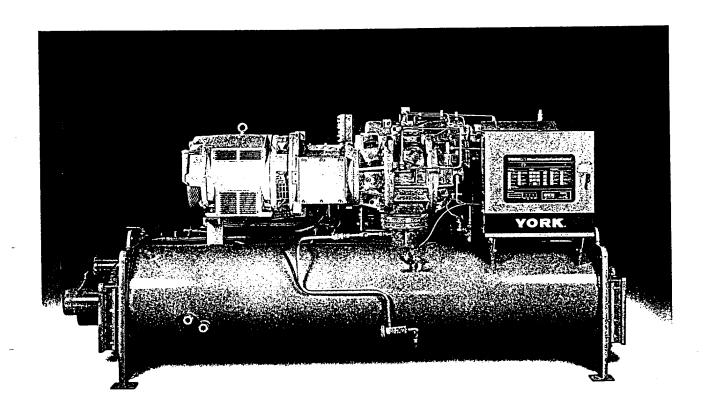


MODEL	Α	В	С	D	E	F	G	н	J	K	L	M	N	Р
YCWZ33AB0	9' - 5-3/4"	5'-0-3/8"	2'-11"	2' - 3-7/8"	4' - 4-13/16"	6 - 3/4"	6 - 3/4"	3'-7"	2'-2-3/4"	1' - 6-1/2"	1'-3-1/2"	4"	4"	5' • 1-3/4"
YCWZ44AB0	9' - 5-3/4"	5'-0-3/8"	2'-11"	2'-3-7/8"	4' - 4-13/16"	6-3/4"	6 - 3/4"	3'-7"	2' - 2-3/4"	1'-6-1/2"	1'-3-1/2"	4"	4"	5' - 1-3/4"
YCWZ47CC0	9' - 6-1/8"	5'-2-3/8"	2'-11"	2'-4"	4' - 4-13/16"	6-3/4"	6 - 3/4"	3'-7"	2' - 4-7/8"	1'-6-1/2"	1' - 3-1/2"	4"	6"	5' - 2-3/4"
YCWZ77CC0	9' - 6-1/8"	5'-2-3/8"	2'-11"	2'-4"	4' - 4-13/16"	6-3/4"	6 - 3/4"	3'-7"	2'-4-7/8"	1'-6-1/2"	1' - 3-1/2"	4"	6"	5' - 2-3/4"
YCWZ88CC0	9' - 6-1/8"	5'-2-3/8"	2'-11"	2'-4-7/8"	4' - 4-13/16"	6-3/4"	6 - 3/4"	3'-7"	2'-4-7/8"	1'-6-1/2"	1' - 3-1/2"	4"	8"	5' - 2-3/4"
YCWZ88HD0	9'-4-1/4"	5'-8-1/8"	2'-11"	2'-9"	4' - 7-1/4"	87	7-3/4"	3'-6-1/2"	2'-10-3/4"	1'-6-1/2"	1'-3-1/2"	4"	87	5'-2"
YCWZ89HD0	9' - 4-1/4"	5'-8-1/8"	2'-11"	2'-9"	4' - 7-1/4"	8"	7-3/4*	3'-6-1/2"	2' - 10-3/4"	1'-6-1/2"	1'-3-1/2"	4"	8"	5'-2"
YCWZ99HD0	9' - 4-1/4"	5' - 8-1/8"	2' - 11"	2'-9"	4' - 7-1/4"	8"	7 - 3/4"	3'-6-1/2"	2 - 10-3/4"	1' - 6-1/2"	1'-3-1/2"	4"	8~	5'-2"

YORK INTERNATIONAL



No other screw chiller costs less to install



Factory packaging reduces field labor costs.

YORK 6 CodePak 12 screw chillers are designed to keep installation costs low. Where installation access is not a problem, the unit can be shipped completely packaged, requiring only three field installation steps:

- Connect power leads to solidstate starter disconnect switch.
- Connect chilled and condenser water piping. Victaulic grooves require no on-site welding.
- Connect chilled water flow switch and pump interlocks to control panel.

That's it. No other screw chiller is quicker, easier, and less expensive to install. Most require additional field labor to complete the following extra steps:

**YORK CODEPAK SCREW CHILLER SELECTION PROGRAM (AF0101) **

ISSUE DATE: 8/95 REV. v1_04.I.D.D

PROJECT - SALES ENGINEER -

Constant 80°F ECWT

DATE- 02/12/96 PAGE- 1 OF 1

CUSTOMER -

PART LOAD PERFORMANCE FOR:

OPEN SCREWPAK MODEL YSCBBBSO-CFBO REFRIG = 22 HERTZ = 60

COOLING DUTY - CWT IS WATER TEMP ENTERING CONDENSER

PERCENT LOAD	CAPACITY (TONS)	PERCENT POWER	INPUT POWER (KW)	CWT (F)	UNIT PERF (KW/TON)
100	180	100	106	80.0	.589
90	162	92	97	80.0	.599
80	144	80	85	80.0	.590
70	126	71	75	80.0	.595
60	108	61	65	80.0	.602
50	90	49	53	80.0	.589
40	72	45	49	80.0	.681
30	54	40	43	80.0	.796
20	36	· 35	38	80.0	1.056
10	18	32	35	80.0	1.944

INPUT DATA - (0= NOT SPECIFIED)

CAPACITY (TONS) = 180 MOTOR CODE = CF VOLTS = 460

STARTER TYPE = 1 SSS INRUSH = 555 6 LEAD FLA 149 LRA 1230 STARTER NAME = SOLID STATE STARTER SSS FLA = 260 SSS LRA = 1556 SSS SIZE = 7L-46

EVAPORATOR - TUBE = 182

PASSES = 2 GPM = 432 FOULING FACTOR = .00025 LEAV TMP(F) = 44.0

CONDENSER - TUBE = 221

PASSES = 2 GPM = 540 FOULING FACTOR = .00025

MAX MOTOR KW = 124

CERTIFIED IN ACCORDANCE WITH ARI STANDARD 550~92

```
**YORK CODEPAK SCREW CHILLER SELECTION PROGRAM (AF0101) **
 ISSUE DATE: 8/95
                                                             REV. v1_04.I.D.D
 PROJECT
                                                             DATE- 02/12/96
 SALES ENGINEER -
                                                             PAGE- 1 OF 2
 CUSTOMER
 TYPE OF SELECTION= UNIT RATING
                                          REFRIGERANT=22
                                                               HERTZ= 60
 SELECTION NO.
 MODEL DESIGNATION YSCBCBSO-CFBO
 CAPACITY (TONS)
                     177
 INPUT POWER (KW)
                                              85°F ECWT
                          112
 UNIT PERF (KW/TON)
                         .630
 FLOW ORIFICE SIZE
                           K
 FLA
                          158
 LRA
                         1230
 INRUSH (AMPS)
                         555
 SSS SIZÈ
                       7L-46
 EVAPORATOR -
 PASSES
  FOUL FACTOR
                            .00025
 WATER ENT. TEMP (F)
WATER LVG. TEMP (F)
                        53.82
44.00
 WATER FLOW (GPM)
WATER VEL. (FPS)
                          432
                         3.9
 WATER PR. DROP (FT)
                           5.8
 CONDENSER -
 PASSES
 FOUL FACTOR
                            .00025
 WATER ENT. TEMP (F)
WATER LVG. TEMP (F)
                         85.00
                          94.17
 WATER FLOW (GPM)
                          540
 WATER VEL. (FPS)
                           4.0
 WATER PR. DROP (FT)
                           6.1
MAX MOTOR LOAD (KW)
                    124
CERTIFIED IN ACCORDANCE WITH ARI STANDARD 550-92
INPUT DATA - (0= NOT SPECIFIED)
   CAPACITY (TONS) = 180 MOTOR CODE = CF
   VOLTS = '460 STARTER TYPE = ( 1) SOLID STATE
   EVAPORATOR -
                    TUBE = 182
        PASSES = 2 GPM = 432 FOULING FACTOR = .00025
   CONDENSER - TUBE = 221
```

PASSES = 2 GPM = 540 FOULING FACTOR = .00025

**YORK CODEPAK SCREW CHILLER SELECTION PROGRAM (AF0101) **

REV. v1_04.I.D.D ISSUE DATE: 8/95

PROJECT

DATE- 02/12/96

PAGE- 2 OF 2

SALES ENGINEER -CUSTOMER -

REFRIGERANT=22

MODEL YSCBCBSO-CFBO

IPLV / APLV CALCULATION

WHERE: A = KW/TON AT 100% CAPACITY

B = KW/TON AT 75% CAPACITY C = KW/TON AT 50% CAPACITY D = KW/TON AT 25% CAPACITY

% LOAD	CAPACITY (TONS)	ECWT (F)	KW/TON	WEIGHT	WEIGHTED TONS/KW
100	177	85.000	.633	,17	.2687
75	133	78.750	.564	.39	.6916
50	88	72.500	.489	.33	.6753
25	44	66.250	.614	.11	.1793
					1.8149

APLV = ----- = .5511.8149

CERTIFIED IN ACCORDANCE WITH ARI STANDARD 550-92

INPUT DATA - (0= NOT SPECIFIED)

CAPACITY (TONS) = 180 MOTOR = CF

VOLTAGE = 460 STARTER TYPE = (1) SOLID STATE STARTER EVAPORATOR -

PASSES = 2 LEAV. TEMP (F) = 44.00 GPM = 432 FOULING FACTOR = .00025 TUBE NO. = 182

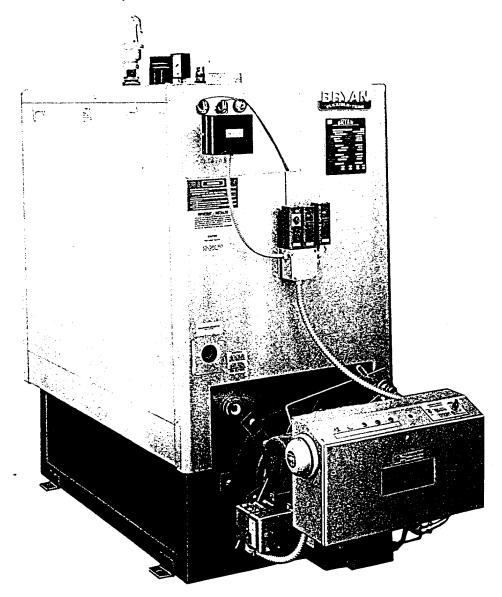
CONDENSER -

PASSES = 2

GPM = 540 FOULING FACTOR = .00025 TUBE NO. = 221

Forced Draft Gas, Oil or Dual Fuel Fired Flexible Tube Boilers

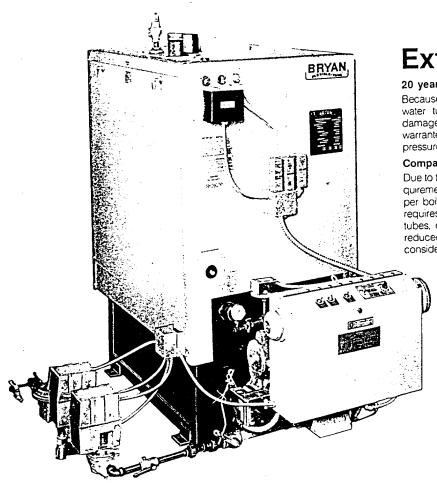
CL Series Hot Water Heating 750,000 to 3,000,000 BTU's



BERVAN BOILERS

Featuring the exclusive Bryan "Flexible Water Tube" design





Extra Value

20 year warranty

Because of the proven effectiveness of the flexible water tube design in eliminating thermal shock damage, every Bryan Flexible Water Tube Boiler is warranted for 20 years, non-prorated, against pressure vessel damage due to thermal shock.

Compact design requires minimum floor space

Due to the flexible water tube design, floor space requirements are minimized, while heating surface area per boiler HP is exceptionally high. The CL Series requires only 24" clearance for servicing the water tubes, only on one side of the boiler. Dramatically reduced space requirements in a boiler room mean considerable savings in building costs.

Knockdown™ Boilers for Replacement Installations

CL Series Forced Draft Water Boilers are available as knockdown models which are shipped in sections, partially disassembled to pass through standard door size openings, and assembled at final location. There is no need to knock out walls, and assembly does not require expensive certified welding.

Equipment furnished

Standard

- Forced draft design · Combination thermometer
- and altitude gauge · A.S.M.E. rated relief valve
- · Combustion safety control
- High limit control
- Low water cut-off
- Built-in combustion chamber
- · Flange-mounted burner
- · Delay oil valve
- · Water temperature control (standard is 240°F ma×mum)
- · Heavy gauge jacket with 11/2" insulation
- All controls mounted and wired
- 1. Combination water feeder and low water cut-off.
- 2. Electronic combustion safety control (standard with gas or dual fuel).
- 3. Induced draft fan.

Optional

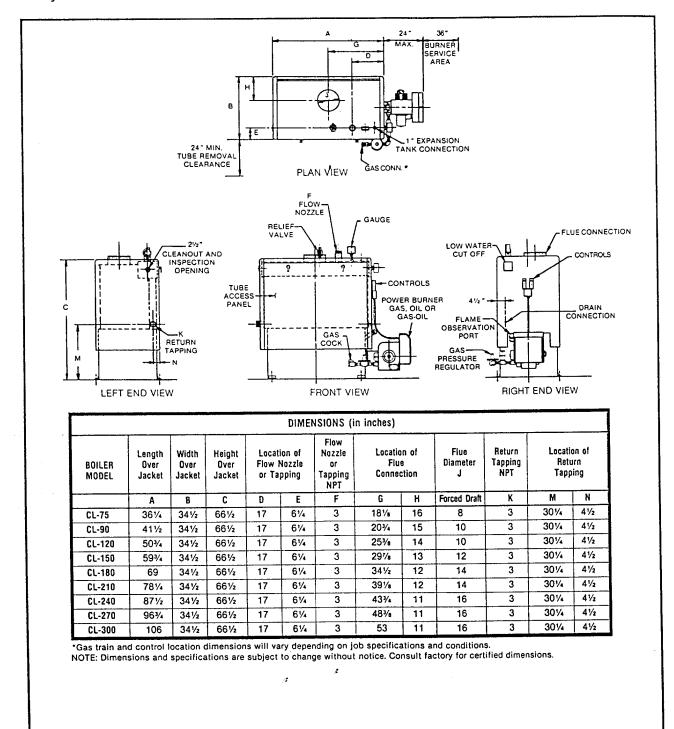
- 4. Boiler construction and controls for pressures exceeding 60 psi.
- 5. Heat exchanger coils for domestic water or other purposes. For storage tank or tankless applications.

SPECIFICATIONS

		Firing	Rate	Gross	Output	Net Load Re	commendation (EDR)	
В	loiler Model Number	BTU's per Hour	Oil Gallons per Hour	BTU's per Hour	Boiler Horsepower	BTU's per Hour	Hot Water Radiation Sq. Ft.	Approximate Shipping Weight
	CL-75	750.000	5.3	600,000	18	522.000	3,480	1,830
┝	CL-90	900.000	6.4	720,000	21	626.000	4,180	2,150
\vdash	CL-120	1,200,000	86	960,000	29	835,000	5,560	2,400
<u> </u>	CL-150	1.500.000	10.7	1,200,000	36	1,042,000	6,870	2,700
_	CL-130	1.800.000	12.9	1,440,000	43	1,250.000	8,350	3,000
┝	CL-210	2 100 000	150	1.680.000	50	1,460.000	9.750	3,400
	CL-240	2.400.000	17.1	1 920 000	57	1,670,000	11,120	3,600
┞	CL-270	2 700.000	19.3	2 160,000	64	1.880.000	12,500	3.900
┡	CL-270	3,000,000	21.4	2 400.000	72	2.087.000	13,920	4,200

us de la sudivistica il Electric disperi cora perar difequency (115 vot. 60 Hertz is standard). (2) Relief valve En male colori entroni diecia realizza desizza NOTE:

Bryan CL Series Gas, Oil, or Dual Fuel Fired Flexible Tube Boilers

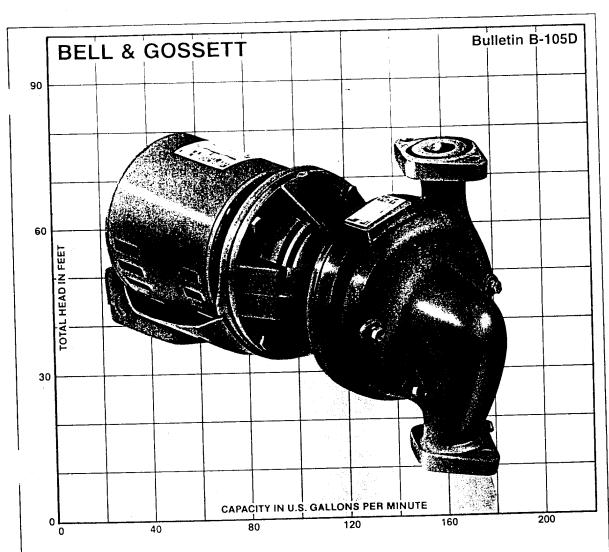




P.O. Box 27, Peru, Indiana 46970 / Telephone: 317-473-6651 FAX: 317-473-3074

orm No. 1910-3

Printed in US 71-41-



The Extra Quiet In-Line Mounted Pump

Applications

- Hydronic Heating & Cooling Systems
- Domestic Water
- Fluid Transfer
- Industrial Process

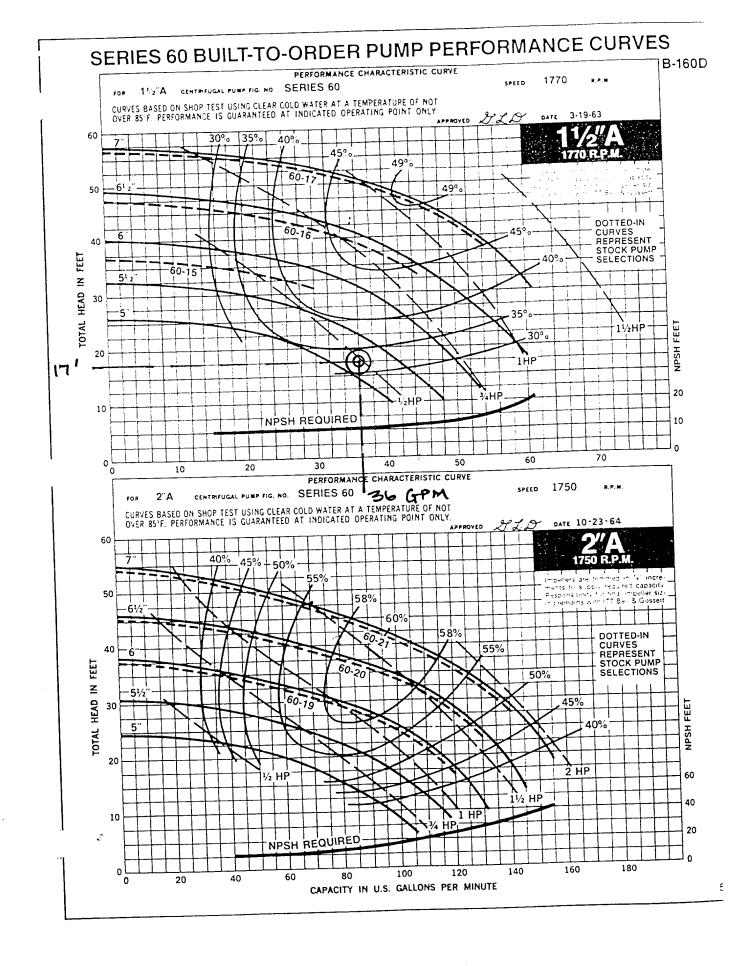
Advantages

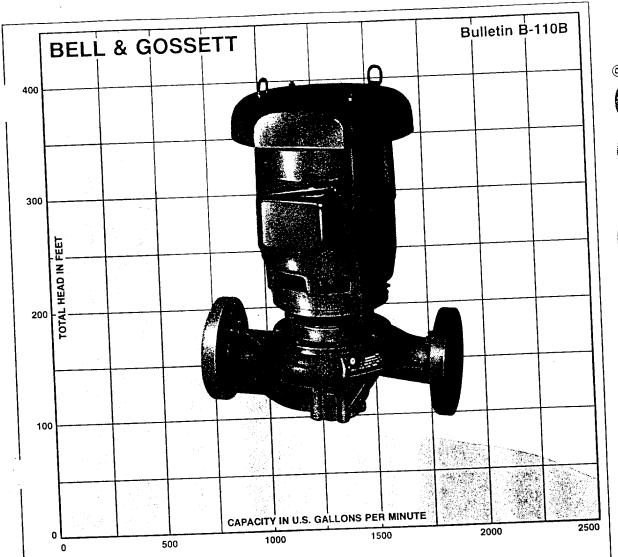
- Compact Design
- Quiet Operation
- Easy Installation
- Easy Maintenance
- Wide Range of Standard Sizes





© COPYRIGHT 1966, 1987 BY ITT CORPORATION







In-Line Mounted Centrifugal Pumps

Applications

- Hydronic Heating & Cooling Systems
- Industrial Process
- General Service
- Pressure Boosting

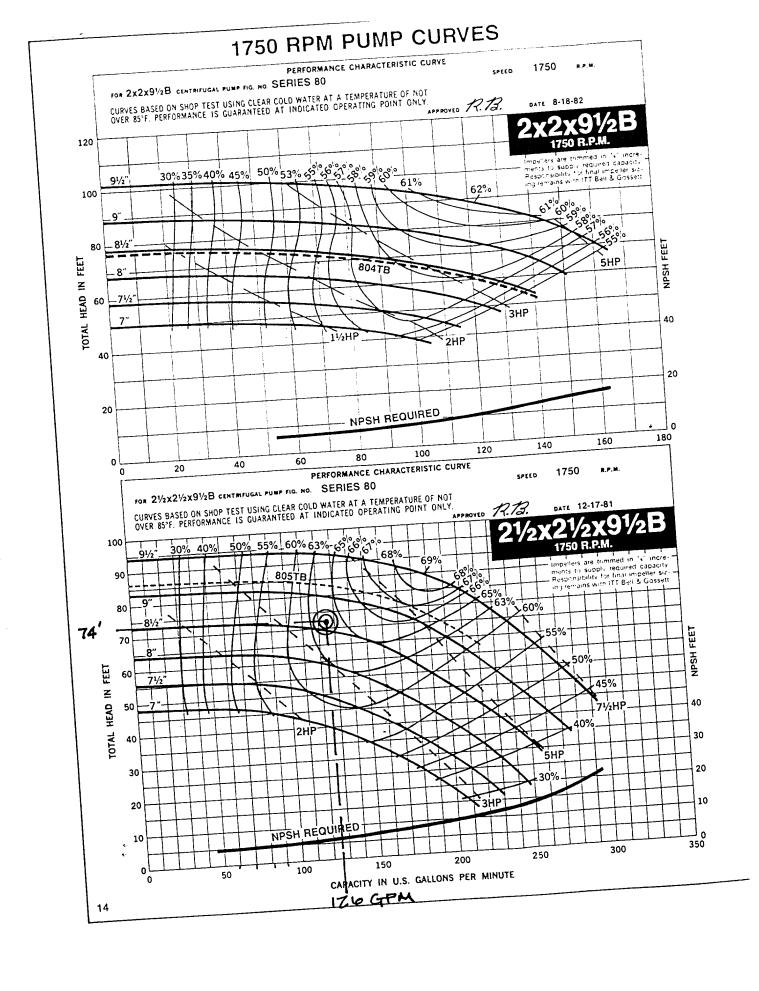
Advantages

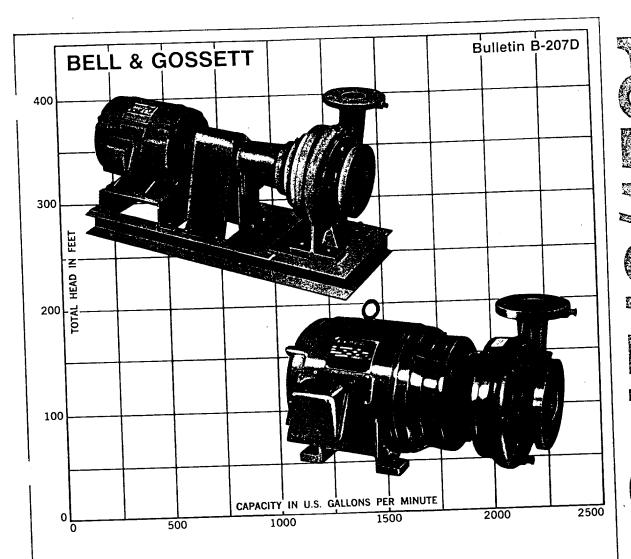
- Close Coupled
- Space Saving
- Long Life
- Low Maintenance
- Horizontal or Vertical Installation
- Several Seal Options





& COPYRIGHT 1970, 1986 BY ITT CORPORATION





Centrifugal Pumps

Applications

- Hydronic Heating & Cooling Systems
- Industrial
- Pressure Boosting
- General Pumping Requirements

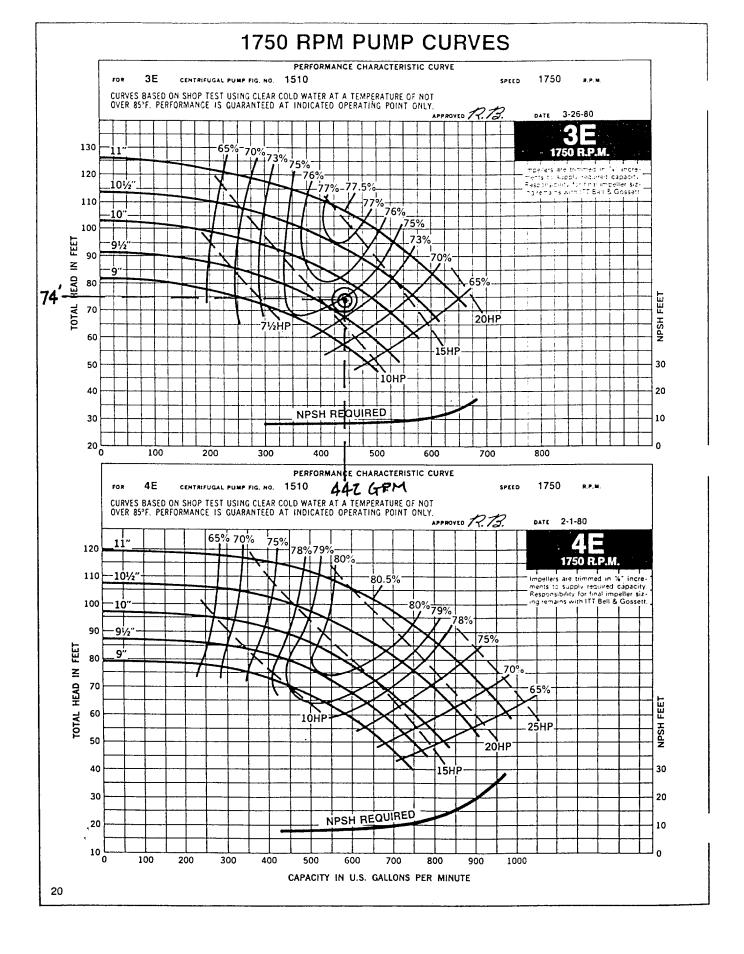
Advantages

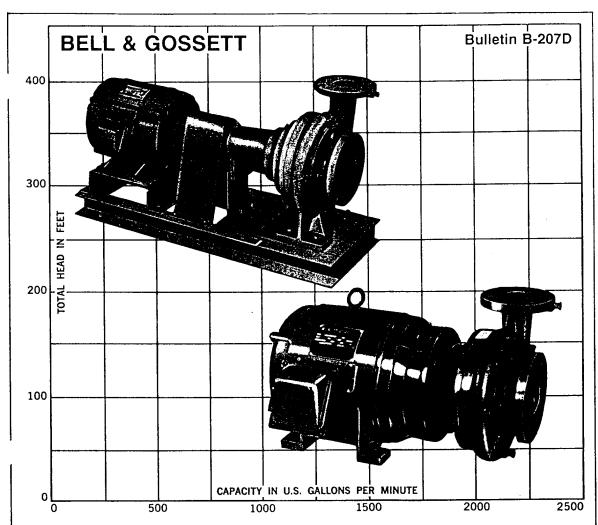
- High Efficiency Low Operating Costs
- Modern Designs
- Easy Maintenance
- Several Seal Options
- Broad Range of Application





© COPYRIGHT 1973, 1988 BY ITT CORPORATION





Centrifugal Pumps

Applications

- Hydronic Heating & Cooling Systems
- Industrial
- Pressure Boosting
- General Pumping Requirements

Advantages

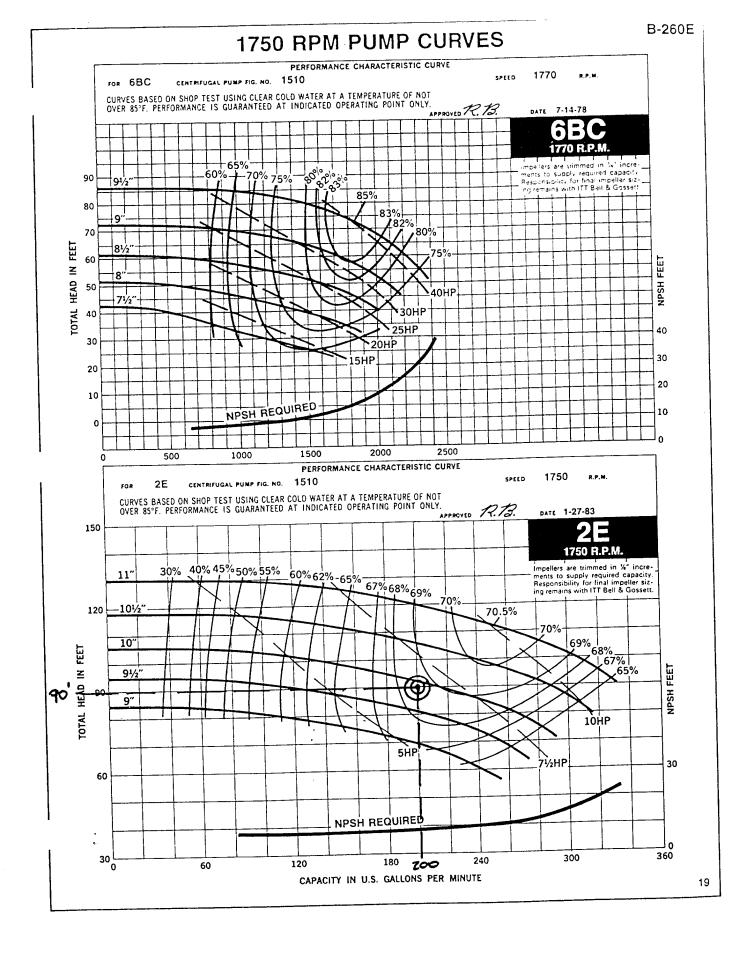
- High Efficiency Low Operating Costs
- Modern Designs
- Easy Maintenance
- Several Seal Options
- Broad Range of Application

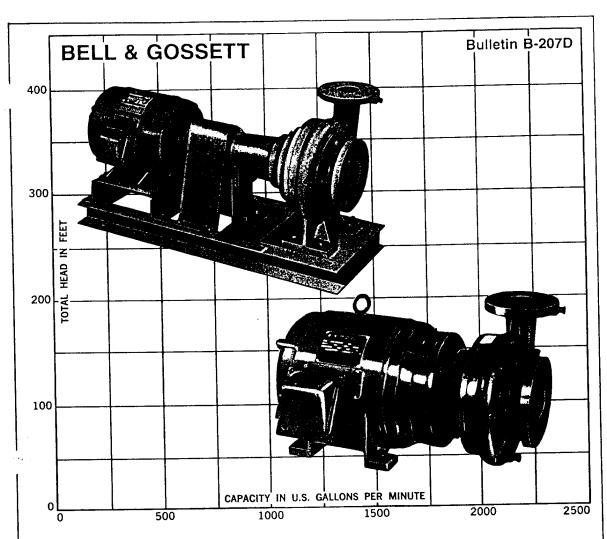




© COPYRIGHT 1973 1988 BY ITT CORPORATION







Centrifugal Pumps

Applications

- Hydronic Heating & Cooling Systems
- Industrial
- Pressure Boosting
- General Pumping Requirements

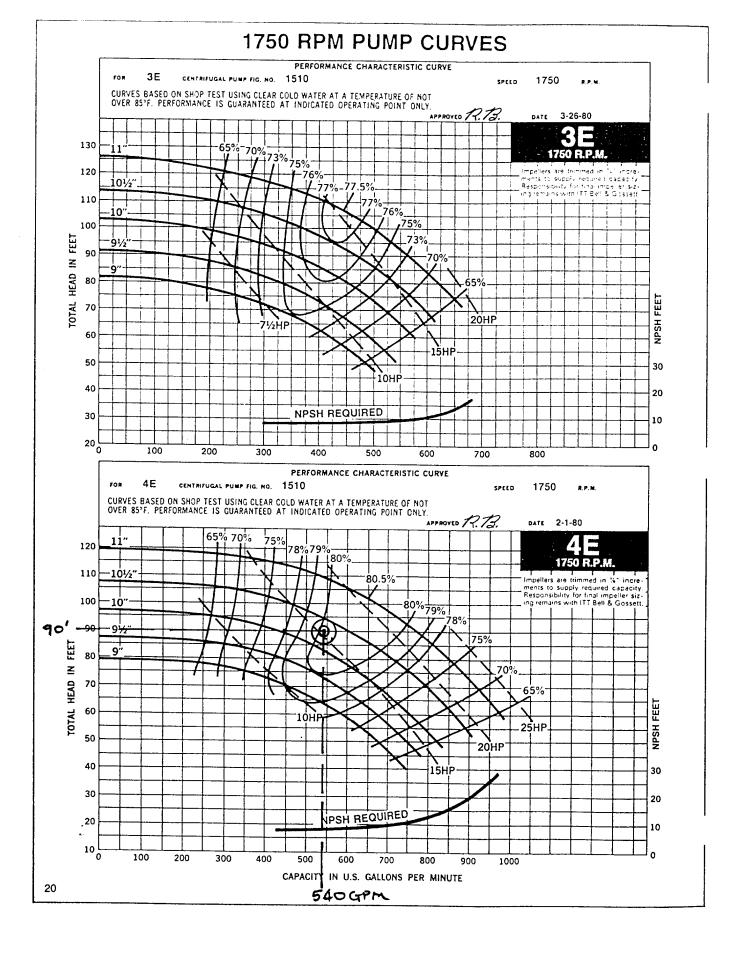
Advantages

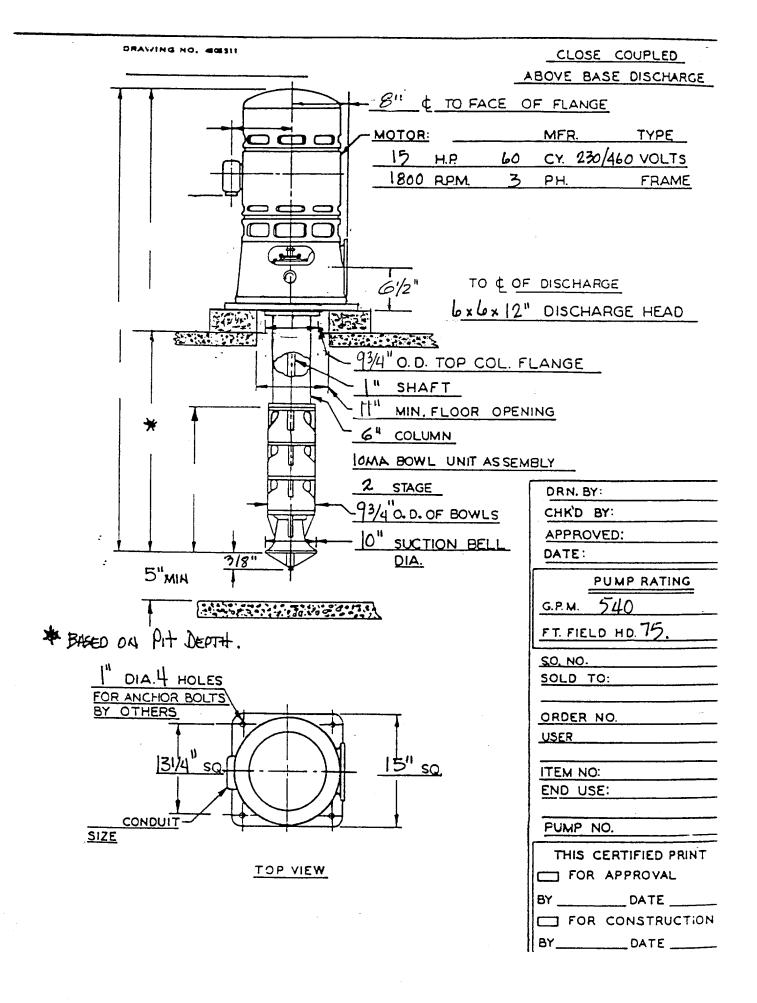
- High Efficiency Low Operating Costs
- Modern Designs
- Easy Maintenance
- Several Seal Options
- Broad Range of Application

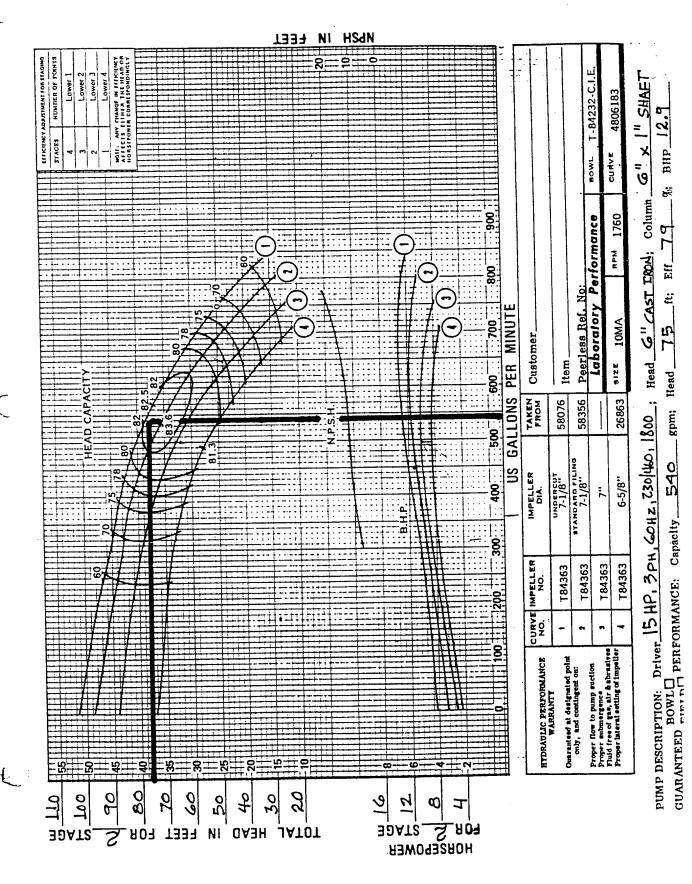




© COPYRIGHT 1973, 1988 BY ITT CORPORATION









MODEL KC-1000 GWB

TECHNICAL DATA

AERCO KC Gas Fired Hot Water Boiler System

The AERCO KC Water Boiler is a true industry advance that meets the needs of today's energy and environmental concerns. Designed for application in any closed loop hydronic system, it relates energy input directly to fluctuating system load, yielding seasonal efficiencies as high as 95%. The boiler can be used singly or in modular arrangements for inherent standby with minimum space requirements. Venting flexibility permits installation without normal restrictions.

The advanced electronics of each boiler module offer selectable modes of operation. The options available include:

> Constant Temperature Internal Setpoint Indoor/Outdoor Reset 4-20ma Linear Signal Response AERCO Boiler Management System Integration AERCO Combination Domestic Water/Boiler Plant

Regardless of the mode of operation, the load tracking capability of every unit delivers the ultimate in energy control through energy input modulation with a 14:1 ratio while meeting all load demands.

With condensing capability, the KC Boiler is ideally suited for modern low temperature as well as conventional heating systems. Because of the compact design with direct or conventional venting, the KC Boiler system is applicable to either new construction or retrofit application with the same excellent results. Efficiently, reliability, and longevity make the KC Boiler System a true step forward in heating system design.

KC1000 FEATURES

- · Natural Gas or Propane
- 14:1 Turndown Ratio
- Direct Vent or Conventional Vent Capabilities
- ASME 150 PSIG Working Pressure Certified
- UL, ULC Listed, FM Approved, ASME Coded
- UL, ULC Listed for Alcove Installation on Combustible Flooring
- · Quiet Operation throughout Firing Range
- Internal Low Water Cutoff and Dual Over Temperature Protection
- · Compact Space Efficient Design
- Precise Temperature Control +/- 2F



KC-1000 Specifications

BTU Input	1,000,000 BTU/Hr
Net Output @ full input	860,000-915,000 BTU/Hp
ASME Working Pressure	150 PSIG
Electrical Requirement	120/1/60 20 Amp
Gas Requirements	8.5" W.C. Minimum @Full Load 14" W.C. Maximum
Vent Size	6" Diameter
Water Connections	4" Flanged 150 lb. ANSI
Gas Connection	1-1/4" NPT

Minimum Water Flow	25 GPM
Maximum Water Flow	150 GPM
Water Pressure Drop	0.23 Ft. 100 GPM
Water Volume	23 Gallons
Control Range	50F to 220F
Standard Listings & ApprovalsU	L, ULC, FM, ASME
Optional Approval	IRI
Weight, Installed	1200 lbs.

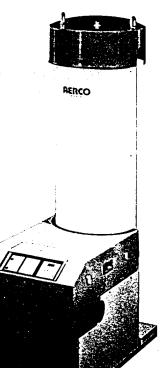
*Output is dependent upon return water temp, and firing ratesee efficiency curves on reverse.

†Up to 2000 Altitude.

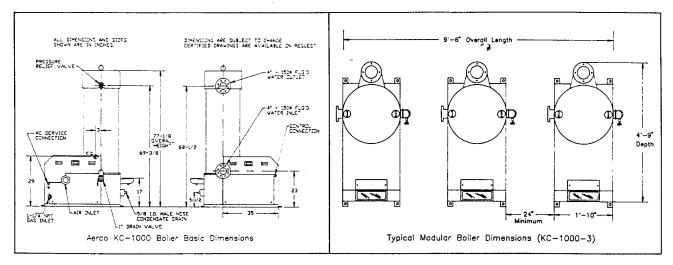








Dimensions KC-1000 Boiler



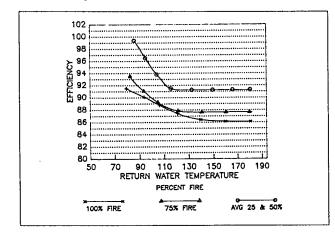
Ratings and Dimensions

Modules	Model	Mbh Input	MBH Output	Length	Depth	Height	Weight
	(a)	(b)	(b) (c)				
One (1)	KC-1000	1000mbh	860mbh-915mbh	1′10″	4′9″	6'8"	1200lbs.
Two (2)	KC-1000-2	2000mbh	1720mbh-1830mbh	5′10″	4′9″	6′8″	2400lbs.
Three (3)	KC-1000-3	3000mbh	2580mbh-2745mbh	9'8"	4′9″	6′8″	3600lbs.
Four (4)	KC-1000-4	4000mbh	3440mbh-3660mbh	13'6"	4′9″	6′8″	4800lbs.
Five (5)	KC-1000-5	5000mbh	4300mbh-4575mbh	17'4"	4′9″	6'8"	6000lbs
Six (6)	KC-1000-6	6000mbh	5160mbh-5490mbh	21'2"	4′9″	6′8″	7200ibs
Seven (7)	KC-1000-7	7000mbh	6020mbh-6405mbh	25′	4′9″	6′8″	8400lbs
Eight (8)	KC-1000-8	8000mbh	6880mbh-7320mbh	28'10"	4'9"	6′8″	9600lbs

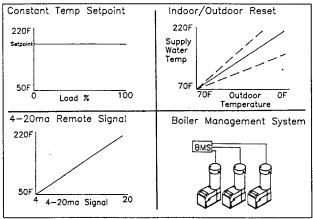
⁽a) Style to be Determined by Individual Application Requirement

- (b) Altitude below 2,000°. Apply Altitude Correction Factor above 2,000. (c) Output dependent upon application-see efficiency curves.

Efficiency Curves



Programmable Modes of Operation



Represented by:

GFB-1 BBC 08/93 5M

HEAT EXCHANGES • WATER HEATERS • BOILERS CONTROL VALVES . STEAM GENERATORS



AERCO INTERNATIONAL, INC. • 159 PARIS AVE., P.O. BOX 128 NORTHVALE, N.J. 07647-0128 • (201) 768-2400 • FAX 201-768-7789

APPENDIX F BUILDING AND EQUIPMENT DATA FORMS

TABLE OF CONTENTS

BUILDING DESCRIPTION

NAME: Building 26129 (LSTC)

<u>USE:</u> Laser Systems Test Center, administration, offices and control rooms.

GROSS AREA (SQ.FT.): 89,400 STORIES: 4 DATE OF SURVEY: 10/10/95

DATE OF CONSTRUCTION: 1963, major remodel in 1982

STRUCTURE: Steel and concrete

EXTERIOR WALLS: 24" thick structural concrete, un-insulated.

ROOF: Reinforced 24" concrete deck and domes with 2" polyurethane foam insulation sprayed on.

<u>FLOOR CONSTRUCTION</u>: Concrete basement slab on piers, concrete on metal deck for all upper floors.

FLOOR FINISH: Sealed concrete in basement, mostly asphalt tile and raised computer floors elsewhere.

<u>CEILINGS</u>: Lay-in acoustical 2x4 tile.

WINDOWS: None

<u>COOLING EQUIP</u>: Single and multizone air handling units in basement. Units are served by two R-11 chillers in basement mechanical room.

<u>HEATING EQUIP</u>: See cooling equipment above. Hot water heating coils are mounted in supply air ductwork to serve individual zones. Coils served by heat reclaim heat exchangers on both building chillers.

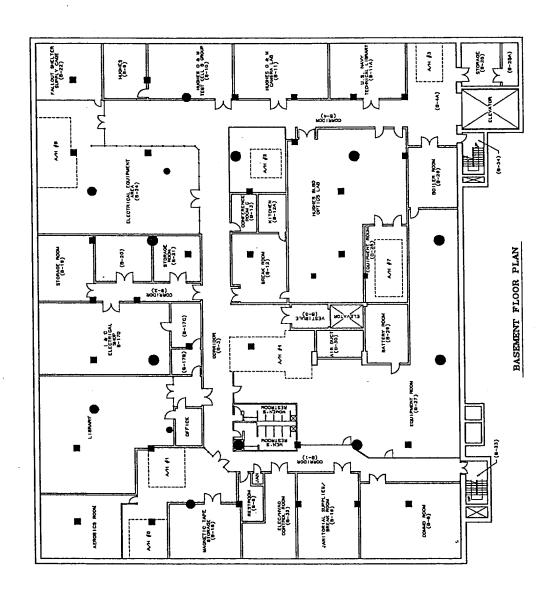
<u>LIGHTING</u>: Generally fluorescent fixtures of various types installed throughout building. All fixtures have F-40CW lamps and standard magnetic ballasts..

<u>DOMESTIC WATER HEATING:</u> Single electric water heater in basement to serve building restrooms.

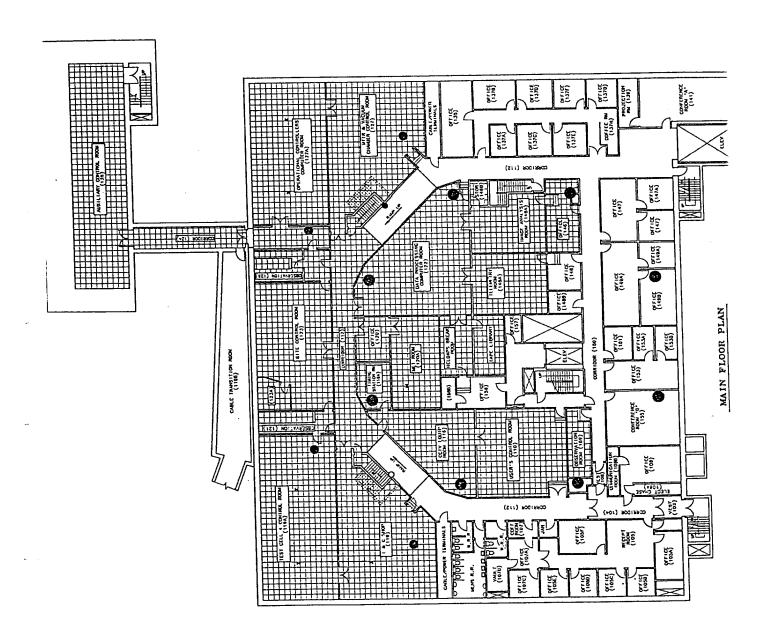
OTHER: Electronic test monitoring and control equipment, as well as personal computers scattered throughout building.

<u>REMARKS</u>: Poor temperature control, generally cold (67°F to 70°F) inside building during field survey. All electronics equipment and most lighting appears to be left on 24 hours a day. Some areas unoccupied but still conditioned and lighted.

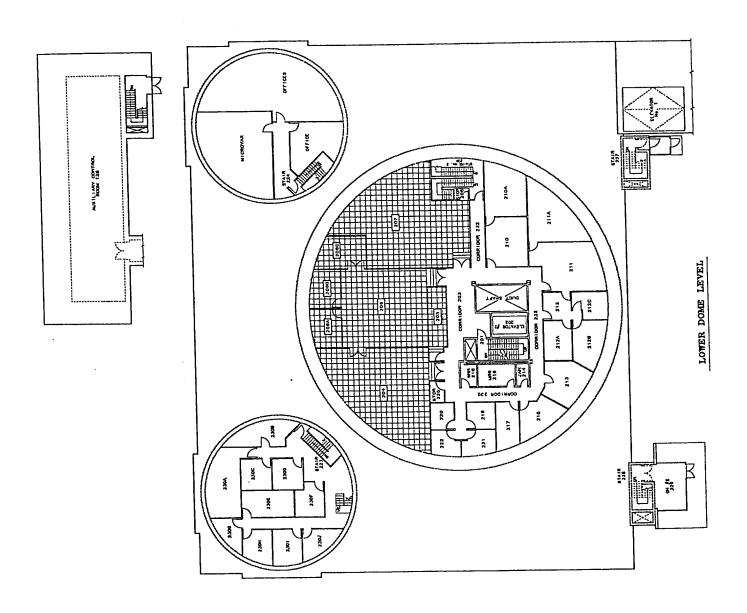


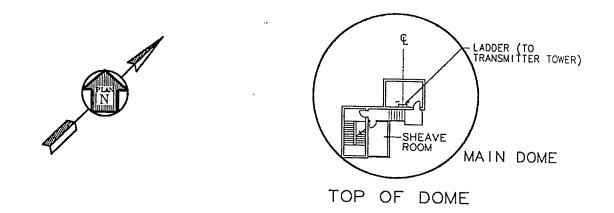


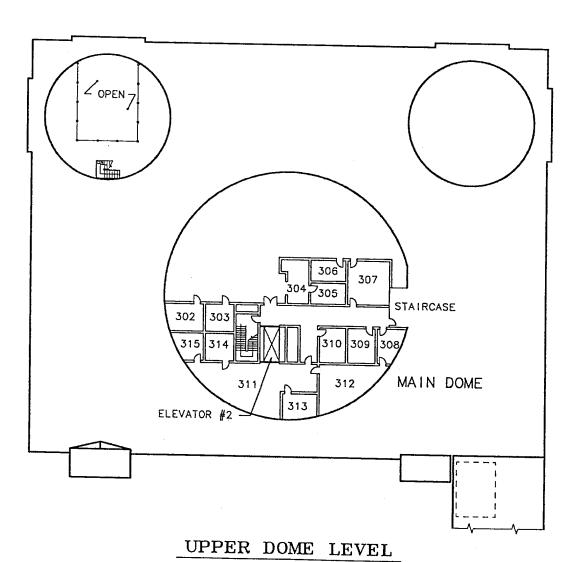












		HVAC EQUIPMENT	HVAC EQUIPMENT LIST FOR: HELSTF Facility, LSTC Building January 2, 1996	y, LSTC Building					
ITEM	QTY.	DESCRIPTION	AREA SERVED	FULL	OPER/	OPERATING TIMES	IMES	ANNUAL USE	USE
	,	2	טובע פרועבה	LOAD	HRS	DAYS	WKS	KWH	GAL
Water Chiller		York OTA1M1B1-OGB, R-11	7	0 077					
CH-1	-	heat recovery mode = 91.7 tons	chilled water heating water (95F)	142.0 KW 88.0 KW (rec.)	os g	by computer model	lepo	771,420	
		Hermetic Centr.							
Water Chiller	-	265 tons	Decommisioned		0	0	0	0	
CH-2		7.5 degree delta T						ı	
		York OTA1M1B1-OGB, R-11							
Water Chiller	_	cooling only mode = 153.5 tons	chilled water	142.0 KW	by cor	by computer model	odel	514.776	
CH-3		heat recovery mode = 91.7 tons	heating water (95F)	88.0 KW (rec.)	•				
Fump - P3A, P3B	N	10 hp	domsetic water	7.0 KW	7	7	25	20,384	
Domestic Water			pressure						
		Daco - 25 hp							
Pump - P5	-	horizontal splitcase	heat recovery water	16.6 KW	by cor	by computer model	labo	145,416	
Heating Water		300 gpm, 155°	from CH-1 & CH-3						
		Daco - 60 hp							
Pump - P7	_	horizontal splitcase	chilled water	39.3 KW	by con	by computer model	lapo	344,268	
Chilled Water	-	900 gpm, 163' head	CH-1 and CH-3						
		Daco - 60 hp							
Pump - P8	_	horizontal splitcase	standby for P7	47.6 KW	0	0	0	. 0	
Chilled Water		870 gpm, 161'							
į		GE			:				
Pump - 10A	-	30 hp	condenser water	27.5 KW	by con	by computer model	ode!	240,900	
Condenser water			CH-1						
Pump - 10B	-	GE 30 ho	reference water	700	200	40	-	000	
Condenser Water	•		CH-3	200	jo Ka	oy computer model	<u> </u>	900,300	
							-		
Sump Pump	7	10 HP	sump water	6.6 KW	2	7	25	19,219	
Cooling Tower Fan CT-1A	-	BAC model CFT-2420C	condenser water	12.5 KW	by con	by computer model	lebo	29,539	*****
Cooling Tower Fan	_	BAC model CFT-2420C	condenser water	10.8 KW	by com	by computer model	labo	64,841	
-in					j				

377		HVAC EQUIPMENT LIST FOR: January	LIST FOR: HELSTF Facili January 2, 1996	HELS1F Facility, LS1C Building 2, 1996					
ITEM	OTY	DESCRIPTION	ARFA SFRVED	FULL	OPER/	OPERATING TIMES	IMES	ANNUAL USE	Е
	;		אויבא טבוועבם	LOAD	HRS	DAYS	WKS	KWH	GAL
Steam Boiler	-	Kewanee Scotch Marine Model LS150-0 5023 MBH, 150 BHP	Decommisioned		0	0	0		0
Air Compressor AC # 1A	-	Quincy 15 HP - Reciprocating Tank #3 - 134 gallons	lab and control air	21.0 A 440.0 V - 3 ph. 16.0 KVA	ω	7	52	38,671	
Air Compressor AC # 1B	1	Quincy 15 HP - Reciprocating Tank #3 - 134 gallons	lab and control air	18.5 A 440.0 V - 3 ph. 14.1 KVA	- ∞	7	52	34,079	
Exhaust Fan EF -1	-	Centrifugal 790 cfm	battery room	1.2 KW	by cor	by computer model	lebo	10,512	
Exhaust Fan EF -2	1	Amer. Standard - Centrifugal 3769 cfm	general exhaust	2.7 KW	by cor	by computer model	lebo	23,652	
Water Heater Electric	-	A.O. Smith model DUE - 80 80 gallon	domestic hot water restrooms	24 KW	က	2	52	26,208	
Air Handling Unit - AHU-1 Hot Water Heat		American Standard multi-zone, 10 hp 16,770 cfm	basement	6.5 KW	by cor	by computer model	odei	56,940	-
Air Handling Unit - AHU-2 Hot Water Heat	1	American Standard multi-zone, 15 hp 22,620 cfm	basement	10.2 KW	by cor	by computer model	lapo	89,352	
Air Handling Unit - AHU-3 Hot Water Heat	1	American Standard multi-zone, 10 hp, spray coil 9060 cfm	optical areas	6.5 KW	by con	by computer model	lebo	56,940	
Air Handling Unit - AHU-5 Hot Water Heat	-	American Standard single-zone, 25 hp, spray coil 17,400 cfm	main floor	17.3 KW	by con	by computer model	lebo	151,548	
Air Handling Unit - AHU-6 Hot Water Heat	-	American Standard single-zone, 25 hp, spray coil 16,383 cfm	main floor domes	13.9 KW	by con	by computer model	labo	121,764	
Air Handling Unit - AHU-7 Hot Water Heat	+	American Standard multi-zone, 15 hp, spray coil 12,518 cfm	main floor dome 3 way control	7.4 KW	ру соп	by computer model	lebo	64,824	

		HVAC EQUIPMENT	HVAC EQUIPMENT LIST FOR: HELSTF Facility, LSTC Building January 2, 1996	y, LSTC Building			
	>10	NCIFGIGOGIA	ABEA SEBIVED	FULL	ATING T		VUAL U
I EIV		DESCRIPTION	אוובא פרווע בס	LOAD	HRS DAYS WKS	_	KWH GAL
Computer Room Unit AHU-8	-	Liebert FD305C 8643 cfm, 11 KW elect. heat	room 119	3.3 KW 11.0 KW	by computer model		28,908
Computer Room Unit AHU-9		Liebert FD411C 11,962 cfm, 15 KW elect. heat	room 119A	5.6 KW 15.0 KW	by computer model		49,056
Computer Room Unit AHU-10	- -	Liebert FD139C 4,780 cfm, 6 KW elect. heat	room 123	1.8 KW 6.0 KW	by computer model		15,768
Computer Room Unit AHU-11A	1	Liebert FD280C 7526 cfm, 10 KW elect. heat	room 127A	3.7 KW 10.0 KW	by computer model		32,412
Computer Room Unit AHU-11B	-	Liebert FD280C 7467 cfm, 10 KW elect. heat	room 127A	4.7 KW 10.0 KW	by computer model		41,172
Computer Room Unit AHU-12	-	Liebert FD305C 8800 cfm, 11.4 KW elect. heat	room 127	3.3 KW 11.4 KW	by computer model		28,908
Computer Room Unit AHU-14	ν-	Liebert FD488C 11,513 cfm, 15 KW elect. heat	room 128	5.6 KW 15.0 KW	by computer model		49,056
AHU-S1 Air Handling Unit Hot Water Heat	-	American Standard single-zone, 7-1/2 hp 7846 cfm, 100% O.A.	100% O.A.	4.0 KW	by computer model		29,779
AHU-S4 Air Handling Unit Hot Water Heat	-	American Standard single-zone, 40 hp 47,933 cfm	computer rooms under floor	22.7 KW	by computer model		198,852
Electronics Equipment Data Collection	~	all electronics equipment on UPS feeder.	data collection, instrumentation	60.20 A 480 V 50 KW	24 7 55	52 436	436,800
TOTAL HEATING							0

ANNUAL USE	1.380.576	26,208	1,049,443	930,495	509,550	
OPERATING T	HRS DAYS WKS					
acility, LS	AREA SERVED LOAD					
HVAC EQUIPMENT LIST FOI	DESCRIPTION AR					
	ατγ.					
	ITEM	TOTAL COOLING	TOTAL DHW	TOTAL FANS	TOTAL PUMPS	TOTAL MISC

	ΚVΑ		19.9	49.4	31.1	20.7	14.7	12.7	9.	3.2	7.6	12.0	7.6	19.9	15.9	8.8	4.8	26.3	4.0	6.8	2.4
	KW	DEMAND	16.6	39.3	27.5	18.3	12.5	10.8	1.2	2.7	6.5	10.2	6.5	17.3	13.9	7.4	4.0	22.7	3.3	5.6	1.8
	%	LOAD DE	76.9%	80.5%	101.3%	72.2%	94.9%	82.1%	80.0%	%6:06	70.9%	76.9%	70.9%	80.9%	64.7%	27.0%	%0.09	%8.89	70.4%	77.3%	96.8%
		PS	25 7	62 8	39	26 7	18.5	16	2	4	S.S.	15	9.5	25	50	=	9	33	ro.	8.5	m
	ACTUA	VOLTS AN	460	460	460	460	460	460	460	460	460	460	460	460	460	460	460	460	460	460	460
		EFF	86.5%	91.7%	82.4%	88.2%	84.7%	84.7%	74.0%	81.5%	0.854	0.847	0.854	0.91	0.91	0.895	88.5%	94.3%	79.0%	76.9%	80.5%
	N ATF	14	0.833	0.796	0.885	0.885	0.850	0.850	0.780	0.835	0.855	0.850	0.855	0.870	0.870	0.850	0.830	0.865	0.835	0.830	0.750
l g	HA INTERIOR	151	32.5	0.77	38.5	36.0	19.5	19.5	2.5	4.4	13.4	19.5	13.4	30.9	30.9	19.3	10.0	48.0	7.1	11.0	3.1
MOTOR LIST FOR: HELSTF - LSTC	DATE SURVEYED: October 10 - 13, 1995	VOLTS	460	460	460	460	460	460	460	460	440	440	440	440	440	440	440	440	460	460	460
T FOR: HE	VED: Octor	100	က	ო	6	п	e e	ю	п	г	n	က	ю	r	п	က	က	ဧ	က	n	က
STOR LIS	SURVE	È	25	99	30	8	51	51	1.5	က	5	51	5	55	55	15	7.5	04	vo	7.5	2
W	DATE	AREA SERVED	LSTC	LSTC	CH-1	CH-3	9 .	CH-3	Battery Room	LSTC	Basement	Basement	Optical Areas	Main Floor	Main Floor Domes	Main Floor Dome	LSTC - Outside Air	Computer Room Under Floor	Room 119	900 t mood	Room 123
		DESCRIPTION	Heating Water Pump	Chilled Water Pump	Condenser Water Pump	Condenser Water Pump	Cooling Tower	Cooling Tower	Exhaust Fan	Exhaust Fan	Air Handling Unit w/ Hot Water Heating Coil	Air Handling Unit w/ Hot Water Heating Coll	Air Handling Unit w/ Hot Water Heating Coil	Air Handling Unit	Air Handling Unit	Air Handling Unit					
		Σ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		ITEM	P-5	P-7	P-10A	P-10B	CT-1A	CT-1B	EF-1	EF-2	AHU-1	AHU-2	AHU-3	AHU-5	AHU-6	AHU-7	AHU-S1	AHU-S4	AHU-8	AHU-9	AHU-10

	KVA	_	4.4		0.00		0.4		8.9		0 0 0	290:2		
	KW		3.7		4.7		3.3		5.6		_	245.4		
	% 6	3	77.5%		%9.86		70.4%		77 3%	20.77				
	N N	AMPS	5.5		^		ĸ							
	ACTUAL	VOLTS	460		460		460			460				
		FFF	79.0%		79.0%		%0.62			%6.97				
	ATE	4	0.835		0.835	200.0	78.0	3		0.830		0.846		
	995 NAMEDIATE	AMPS	1.				;	[: 		11.0				
OTC CIT	er 10 - 13, 19	STION	300	004		460		460		460				
	MOTOR LIST FOR: HELS IT - LS 15 DATE SURVEYED: October 10 - 13, 1995	HP PHASE		ო		_ლ	-	e		~	,			
	MOTOR LIS TE SURVE	윺	-	<u>د</u>	-	ιΩ	1	S.		-		-		
,	AO	AREA SERVED		į	Room 12/A		Room 127A		Room 127		!	Room 128		
		NOITGIGGGGG	DESCRIPTION	Air Handling Unit		#CI College 1.14			Air Handling Unit		Air Handling Unit	0		
			ΔTY		-		-		-			-	<u></u>	
			ITEM		AHU-11A		AHU-11B		AHII-12			AHU-14		Total

		LIG	HING EQ	I 등 이	OR: HELST	F - LSTC			Fallo	ů.	INIX	
AREA SERVED	QTY.	FIXTURE DESCRIPTION	FIXTURE	CONTROL	ACTUAL FC	유 교 교	AREA LOAD	HRS	OPER TIMES S DAYS V	MES WKS	KWH	JAL MCF
Stairs - East and West	18	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	Λ 96	W Breakers	30	20	1,728	W 24	7	52	15,096	
Communications - B-8	34	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	Λ 96	W Breakers	43	50	3,264	W 24		52	28,514	
Mech. Room - B-27	31	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	Λ 96	W Breakers	20	15	2,976	W 24		52	25,998	
Battery Room - B-29	4	Explosion Proof Lampholder, 1-150W/A Lamp	150 V	W Local Switch	10	15	009	W 24		52	5,242	
Corridor - B-1	6	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	۸ 96	W Breakers	26	10	864	W 24		52	7,548	110.1
Janitor Supplies / Break Room - B-18	12	4' Pendent Industrial Fluorescent, Standard Ballast, 3-F40/T12/RS/CW Lamps	151 V	W Local Switches	\$ 40	30	1,812	W 24		52	15,830	
Elec/HVAC Control Room - B-32	9	4' Surface Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	Λ 96	W Local Switches	9 60	50	576	W 24		52	5,032	
Janitor Closet	-	Lampholder, 1-100W/A Lamp	100 V	W Local Switch	12	5	100	W 24	4 2	52	874	
Restroom	-	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	Λ 96	W Local Switch	55	20	96	W 24	2	52	839	
AHU Vestibule	7	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	Λ 96	W Breakers	23	15	1,056	W 24	1 7	52	9,225	

		MCF													
	NNCAL	KWH	5,032	8,387	2,516	2,516	839	100	/0/-	30,340	449	10,064		3,355	
		WKS	52	- 25	52	52	52		52	52	52	52		52	
	OPER. TIMES	DAYS	7	7	7	7	^		2	2	Ŋ	7		7	
	OPE	HRS D	24	24	24	24	24		6	24	6	24		24	
	\vdash	4		>	3	3	3	-	>	3	3	3	\$	>	
I	AREA	LOAD	576	096	288	288	96		302	3,473	192	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	701,-	384	
-LSTC	14 J	를 만 -	S	30	50	20	15		20	20	50		2	10	
HELSTF	1982 V T1 1/1	- L	10	24	72	15	10		34	20	65		25	27	
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC	5	CONTROL	Local Switch	Local Switch	Local Switch	Local Switch	Breaker		Local Switch	Local Switch	Local Switch		Breakers	Breakers	
UIPM	ఠ				3	3		+			3	+	≥	3	
TING EQ		FIXTURE LOAD	96	96	96	96	96		151	151	96		96	96	
HOIT		FIXTURE DESCRIPTION	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW	Lamps 4: Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW	Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 3-F40/T12/RS/CW	4' Pendent Industrial Fluorescent, Standard Ballast, 3-F40/T12/RS/CW	Lamps 2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW	Lamps	Standard Ballast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW	rainba
		QTY.	ဖ	9	m	က	-		2	23	2			4	
		AREA SERVED (Magnetic Tape Storage - B-	Aerobics Room	Men's Restroom	Momen's Restroom	olivita A	o none	Office	Library	Office, B.17R		Corridor - B-3	Corridor - B-2	

T													
<u> </u>	MCF							-				-	
ANNIA	KWH	20,128	899	3,355	3,355	3,355	1,677		1,677	2,516	5,032		2,516
	WKS	52	52	52	52	52	52		52	52	52		52
	OPER. IIMES	7	Ŋ	7	7	2	7		7	7			7
i	HRS C	24	ნ	24	24	24	24		24	24	24		24
ŀ	1	3		3	3	3	3		3	3	>		3
	AREA LOAD	2,304	384	384	384	384	192		192	288	576		288
-LSTC	SoE FC	50	20	ις	2	ις	15		15	15	30		30
HELSTF 95	ACTUAL FC	04	42	30	30	21	15		15	56	35		40
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC October 10 - 13, 1995	CONTROL	W Local Switches	Local Switch	Local Switch	Local Switch	Local Switch	Breaker		Local Switch	Local Switch	Local Switch		Local Switch
UIPM		N S	×	3			}	:	3	3	3		3
TING EC	FIXTURE	96	192	96	96	96	8	8	96 	96	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	}	96
LIGH	FIXTURE DESCRIPTION	2x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW	Lamps 4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW	Lamps 4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW	Lamps 1'x4' Surface Wraparound Fluorescent,	Standard Ballast, 2-F40/112/KS/CW Lamps	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW	Lamps 2'x4' Recessed Fluorescent Troffer,	Standard ballast, 2-140/11/2000	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps
	QTY.	24	2	4	4	4		2	2	8		ဖ	က
	AREA SERVED G	I&C Electrical Shop - B-17D	Office - B-17C	Storage - B-19	Ctorage B.20		Storage - 5-21	Vestibule	Vestibule - B-5	Air Diret - B-30		Break Room - B-12	Kitchen - B-12A

	UAL	MCF										
	ANNUA	KWH	1,677	11,741	3,355	10,064	20,128	30,192	12,580	26,837	2,516	10,064
	ES	WKS	52	52	52	52	52	52	52	52	52	52
	OPER. TIMES	DAYS	7	7	7	7	7	7	7	7	7	7
	Q	HRS	24	24	24	24	24	24	24	24	24	24
			>	≥	>	≥	>	≥	>	>	≥	>
	AREA	LOAD	192	1,344	384	1,152	2,304	3,456	1,440	3,072	288	1,152
F-LSTC	CoE	<u>ნ</u>	30	15	15	50	50	50	10	20	15	30
JR: HELST 1995	ACTUAL	5	Locked	30	30	120	55	50	15	45	15	09
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC October 10 - 13, 1995	CONTROL		Local Switch	Breakers	Local Switch	Local Switch	Local Switches	W Local Switches	Breakers	Local Switches	Local Switch	Local Switch
au o			>	8	>	>	3	M N	8		3	3
HTING	FIXTURE	LOAD	192	96	96	192	192	192	96	96	96	192
PIO	FIXTURE DESCRIPTION		2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Baliast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps
	QTY.		1	4	4	ဖ	12	18	15	32	ო	9
	AREA SERVED		Conference - B-13	Electrical Equipment - B-24	Fallout Shelter Supply - B- 22	Hughes - B-9	Hughes O&M Test Cell B Group - B-10	Hughes O&M Camera Lab - B-11	Corridor - B-4	Hughes SLBD Optics Lab	Equipment Room - B-28	US Navy Library - B-11A

		MCF										
	ANNUAL	KWH	3,355	4,193	3,355	1,677	7,548	480	839	868	9,225	668
	S	WKS	52	52	52	52	52	52	52	52	52	52
	OPER. TIMES	DAYS	7	7	7	7	7	7	7	ιΩ	7	2
	P	HRS	24	24	24	24	24	24	24	6	24	თ
			3	3	3	3	3	3	>	W	≯	3
	AREA	LOAD	384	480	384	192	864	55	96	384	1,056	384
LSTC	I O	3 단	15	15	.c	Ŋ	70	10	5	50	20	20
R: HELSTE	ACTIAI	7 2 2	50	25	25	20	20	23	30	63	62	95
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC	TOPEL 13, 1		Breaker	Local Switch	Local Switch	Local Switch	Local Switch	Breaker	Local Switch	Local Switch	Local Switch	Local Switch
OUP!		ų _	>	3	3	*	3	3	3	3	3	3
HING E	TOTILIA	LOAD	96	96	96	96	96	55	96	96	96	96
911		FIXTURE DESCRIPTION	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 1-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps				
ļ		ΩT. ∵	4	ro.	4	2	6	-	-	4	-	4
		AREA SERVED	Vestibule - B-4A	Boiler Room - B-26	Storage - B-25	Storage - B-25A	Basement Mezzanine	Vestibule - 102	Closet - 105	Office - 105A	Reception - 105	Office - 105B

			MCF									
		ANNUAL							-			
			KWH 899	1,348	899	899	3,355	899	1,677	1,677	839	13,418
		MES	WKS	52	52	52	52	52	52	52	52	52
	j	ድԻ	DAYS.	ιΩ	5	5	7	r.		^	7	
			6	თ	6	6	24	0	24	24	24	24
	Š	AREA CAD	}	>	3	3	3	3	3			≥
ပ္			384	576	384	384	384	384	192	192	96	1,536
STF - LS	- 1		22	20	20	90	50	90	50	0	22	10
OR: HEL	1995 ACTUAL	- 5	25	20	80	75	65	88	110	83	30	4
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC	October 10 - 13, 1995 CONTROL ACT		Local Switch	Local Switch	Local Switch	Local Switch	Local Switch	Breaker				
3 EQU	FIXTURE	LOAD	8	≥	≷	3	3	3	3		<u> </u>	3
GHTIN	FE		96	96	96	96	96	96	96	96	96	96
	FIXTURE DESCRIPTION		4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps			
	QTY.		4	O	4	4	4	4	7	7	+ "	6 t. s
	AREA SERVED		Office - 105C	Office - 105F	Office - 105E	Office - 105D	Office - 107A	Office - 107C	Office - 107	Vault - 107B	Janitor	Corridor - 112

	\ 	MCF										
	ANNOAL	KWH	1,677	1,677	1,677	2,516	1,677	23,482	46,965	6,709	3,355	17,612
	S	WKS	52	52	52	52	52	52	52	52	52	52
	OPER. TIMES	DAYS	7	7	7	7	7	7	7	2		2
	OP	HRS	24	24	24	24	24	24	24	24	24	24
	-		3	3	3	3	>	3	3	>	3	≯
	AREA	LOAD	192	192	192	288	192	2,688	5,376	768	384	2,016
LSTC	Soe	윤	10	20	50	50	6	20	20	10	50	90
R: HELSTE	ACTUAL	Б	27	80	75	70	10	45	85	27	64	40
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC	A LONTROL		Breaker	Local Switch	Local Switch	Local Switch	Local Switch	W Local Switches	W Local Switches	Local Switch	Local Switch	W Local Switches
au S		ָ עַ	>	3	3	3	3	3	3	3	3	3
TING E	I I I I I I I I I I I I I I I I I I I	LOAD	96	96	96	96	96	96	192	96	96	96
19I7	NOITE COLUMN	FIXTURE DESCRIPTION	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Baliast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps
		ΩTζ.	2	2	2	ю	2	28	28	ω	4	21
		AREA SERVED	Corridor - 104	Women's Restroom	Men's Restroom	Women's Restroom	Cable/Power Terminals	1 & C shop - 119	Test Cell 4 Control Room -	Cable Transition Room - 119B	Observation - 121	Site control Room - 123

	_			····			Г	——	т		T	
	UAL	MCF										
	ANNUAL	KWH	449	839	2,516	3,355	6',109	33,546	20,128	25,998	1,677	449
	ES	WKS	52	52	52	52	52	52	52	52	52	52
	OPER. TIMES	DAYS	5	7	7	7	7	2	2	7	7	5
	PO	HRS	6	24	24	24	24	24	24	24	24	6
			3	3	3	3	≯	3	3	>	>	3
	AREA	LOAD	192	96	288	384	768	3,840	2,304	2,976	192	192
F-LSTC	Sof	요	50	10	30	10	10	50	50	20	19	20
R: HELST 1995	ACTUAL	ည	75	23	20	108	108	70	33	37	10	37
ITING EQUIPMENT LIST FOR: HELSTF - LSTC October 10 - 13, 1995	CONTROL		Local Switch	W Local Switches	Local Switches	Local Switches	Local Switch	Local Switch				
all o		<u>, </u>	3	3		}	3	3	3		≥	≥
HING E	FIXTURE	LOAD	96	96	96	96	192	192	96	96	96	96
ПСН	NOITGIACOST SELECTION	TINIONE DESCRIPTION	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	1'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps
	7	- - -	2	-	ю	4	4	20	24	31	2	2
	מניים ביים	AKEA SEKVED	Site Control Office - 123A	Vestibule	Observation - 125	Corridor - 124		Auxiliary Control Room -	Operational Controllers Computer Room - 127A	MTIR & Vacuum Chamber control Room - 127	Cable/Power Terminals	Office - 135

		TIGH	HING EQ	ITING EQUIPMENT LIST FOR: HELSTF - LSTC October 10 - 13, 1995	OR: HELS1	TF - LSTC							
AREA SERVED	YTO	FIXTURE DESCRIPTION	FIXTURE		ACTUAL	Se	AREA	H	OPE	OPER. TIMES	SE	ANNOAL	JAL
			LOAD		5	5	LOAD		HRS	DAYS	WKS	KWH	MCF
Conference Room - 135A	5	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	M 96	/ Local Switch	30	30	480	3	24	7	52	4,193	
Office - 137A	2	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	192 W	/ Local Switch	52	50	384	3	თ	r,	52	899	
Office - 137B	2	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	192 W	/ Local Switch	53	50	384	3	თ	ιΩ	52	899	
Office - 137C	2	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	192 W	/ Local Switch	62	50	384	3	თ	r.	52	899	
Office - 137D	2	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	192 W	/ Local Switch	52	50	384	3	თ	r,	52	668	
Office - 137E	2	2x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	192 W	/ Local Switch	65	50	384	3	თ	S.	52	668-	
Office - 137F	2	2x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	192 W	/ Local Switch	78	50	384	3	თ	5	52	899	
Office - 137G	2	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	192 W	/ Local Switch	80	50	384	3	თ	Ŋ	52	899	
Corridor & Coffee Room - 137H	7	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	M 96	/ Local Switch	37	15	672	3	24	7	52	5,871	
Projection Room - 139	2	2x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	192 W	V Local Switch	99	30	384	>	24		52	3,355	

	Т	Т	Τ"	T			T					
	ANNUAL	MCF										
	ANA	KWH	10,064	449	899	899	899	6,709	1,797	899	1,797	899
	ES	WKS	52	52	52	52	52	52	52	52	52	52
	OPER. TIMES	DAYS	7	r2	5	2	5	7	5	2	ည	3
	Ö	HRS	24	6	6	6	6	24	6	6	6	6
			>	≥	≥	>	3	3	3	>	3	3
0	AREA	LOAD	1,152	192	384	384	384	768	768	384	768	384
TF - LST	SOE	5	30	20	20	50	50	10	20	20	20	50
OR: HELS	ACTUAL	ပ်	40	47	50	47	43	20	43	57	54	80
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC October 10 - 13 1995	CONTROL		Local Switch	Breaker	Local Switch	Local Switch	Local Switch	Local Switch				
INO.	RE		3	3	≥	3	}	3	3	>	>	3
SHTING	FIXTURE	LOAD	96	96	96	96	96	96	96	96	192	96
רופ	FIXTURE DESCRIPTION		2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps				
	QTY.		12	2	4	4	4	8	æ	4	4	4
	AREA SERVED		Conference Room "A" - 141	Office - 147C	Office - 147	Office - 147A	Office - 147B	Corridor - 150	Office - 149	Office - 149A	Office - 149B	Office - 151

	UAL	MCF										
	ANNOAL	KWH	1,797	899	899	13,418	1,677	839	1,797	839	2,516	19,289
	ES	WKS	52	52	52	52	52	52	52	52	52	52
	OPER. TIMES	DAYS	ĸ	S	5	7	7	7	5	7	7	2
	Ö	HRS	o	o	6	24	24	24	თ	24	24	24
			≥	3	>	≯	≥	≥	3	≯	3	≥
	AREA	LOAD	768	384	384	1,536	192	96	768	96	288	2,208
F-LSTC	COE	5	50	50	20	30	15	15	50	10	30	50
JR: HELST 1995	ACTUAL	FC	36	76	78	83	Closed	Closed	65	41	Closed	45
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC October 10 - 13, 1995	CONTROL		Local Switch	Local Switch	Local Switch	Breaker	Local Switch	Local Switches				
			>	8	8	8	8	8	8	3	8	× ×
HTING E	FIXTURE	LOAD	96	192	192	192	96	96	96	96	96	96
017	FIXTURE DESCRIPTION		2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps
	OTY.		8	2	2	ω	74	-	80	-	ю	23
	AREA SERVED		Office - 153	Office - 153A	Office - 153B	Conference Room "B" - 155	Electrical Chase - 106A	Communication Room - 106B	Office - 106	Vestibule - 108	Observation Room - 159	User's Control Room - 110

	T	Ī									
	UAL	2									
	ANNUAL	15,096	3,355	3,355	20,128	35,224	6,709	6,709	25,160	3,355	449
	ES	52	52	52	52	52	52	52	52	52	52
	OPER. TIMES	7	7	7	7	7	7	7	7	7	5
	Ö	24	24	24	24	24	24	24	24	24	6
		3	3	≥	>	3	≥	}	3	>	>
	AREA	1,728	384	384	2,304	4,032	768	768	2,880	384	192
F-LSTC	Se	50	50	50	50	50	15	5	50	50	50
IS: HELS1	ACTUAL	5 8	45	50	62	71	63	70	86	36	26
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC October 10 - 13, 1995	CONTROL	Local Switches	Local Switch	Local Switch	Local Switches	Local Switches	Local Switch	Local Switch	W Local Switches	Local Switch	Local Switch
our o	끭	>	3	3	3	3	3	>	<u> </u>	>	3
HTING E	FIXTURE	N 96	96	96	192	192	96	96	192	96	96
PIO TIE	FIXTURE DESCRIPTION	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	4' Pendent Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps
	QTY.	18	4	4	12	21	ω	8	15	4	2
	AREA SERVED	CCTV Equipment Room -	Timing Station Room - 116A	Office - 120	MET Room - 120A	Data Processing Computer Room - 122	HELDPS Break Room	Tape Library	Telemetry Room - 148A	Office 148	Office 148B

							· · · · · · · · · · · · · · · · · · ·					
	ANNUAL	MCF						- %				
	ANN	KWH	8,387	839	4,193	3,355	2,516	225	899	839	4,193	4,193
	ES	WKS	52	52	52	52	52	52	52	52	52	52
	OPER. TIMES	DAYS	2	7	7	2	7	5	5	2	7	2
	Ö	HRS	24	24	24	24	24	თ	თ	24	24	24
			×	3	>	≥	3	3	3	≥	3	≥
	AREA	LOAD	096	96	480	384	288	96	384	96	480	480
TF - LST(COE	FC	90	ĸ	20	10	10	50	20	5	20	20
OR: HELS	ACTUAL	FC	30	50	38	20	40	20	09	Closed	12	12
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC October 10 - 13, 1995	CONTROL		Local Switches	Local Switch	Local Switch	Breaker	Breaker	Local Switch	Local Switch	Local Switch	Breaker	Breaker
		0	3	>	>	>	3	3	8			3
HTING	FIXTURE	LOAD	96	96	96	96	96	96	192	96	96	96
רופ	FIXTURE DESCRIPTION		2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps			
	QTY.		10	1	5	. 4	3	1	2	1	2	5
	AREA SERVED		Image Analysis Room - 146A	Storage - 146B	Office - 146	Corridor - 157		Office - 157	Office - 156	Storage - 156A	Main Stairs - 201	East Stairs - 209

		MCF										
	ANNUAL	2									· · · · · · · · · · · · · · · · · · ·	
	AN	KWH	3,355	1,747	5,032	18,450	2,516	3,355	18,450	1,677	21,805	1,310
	ES	WKS	52	52	52	52	52	52	52	52	52	52
	OPER. TIMES	DAYS	7	7	7	7	7	7	7	7	7	7
	Ö	HRS	24	24	24	24	24	24	24	24	24	24
			≥	≥	*	>	>	8	3	>	>	≥
	AREA	LOAD	384	200	576	2,112	288	384	2,112	192	2,496	150
F-LSTC	CoE	5	10	5	. 50	50	50	50	50	50	50	5
R: HELS- 1995	ACTUAL	5	1	6	82	99	99	55	54	27	46	15
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC October 10 - 13, 1995	CONTROL		Local Switch	Local Switch	Local Switch	Local Switches	Local Switch	Local Switch	Local Switches	Local Switch	Local Switches	Local Switch
SOUR O	RE		}	3	>	M	8	8	W	8	M	>
HTING	FIXTURE	LOA	96	200	192	96	96	96	96	96	96	150
PIO	FIXTURE DESCRIPTION		1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	Surface Incandescent Downlight, 2- 100W/A Lamp	2x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	Lampholder, 1-150W/A Lamp					
	QTY.		4	1	3	22	3	4	22	2	26	-
	AREA SERVED		Corridor - 203	Storage - 225	Computer Room - 205	Test Cell #3 Control - 206	Office - 206A	Office - 206B	Test Cell #3A Instrumentaion - 204	Office - 206C	Test Cell #3B Instrumentaion - 207	Storage - 208

	MCF											
IALIMINA	KWH	8,387	1,348	1,348	3,145	1,348	868		899	1,123	868	1,123
 - 	WKS	- 25	52	52	52	52	52	-	52	52	52	52
	OPER. TIMES		S.	2	S.	S	ιΩ		r.	လ	5	ĸ
	OPER HRS D	24		о	6	6	თ		6	თ	თ	o l
]=		3	3	3	3			3	>	8	>
	AREA LOAD	096	576	576	1,344	576	384		384	480	384	480
-LSTC	등은		S _S	20	20	20	20		90	50	20	20
HELSTF -	C UAL	11	20	45	06	99	02		52	55	80	31
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC	CONTROL	Breaker	Local Switch	Local Switch	Local Switch	Local Switch	ocal Switch		Local Switch	Local Switch	Local Switch	Local Switch
UIPMI		3	3		3	3	3		≥	3	3	3
TING EQ	FIXTURE	98	96	96	192	96	9	30	96 	96	192	96
LIGHT	FIXTURE DESCRIPTION	1'x4' Surface Wraparound Fluorescent, Standard Ballast,	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW	Lamps 2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW	Lamps 2x4' Recessed Fluorescent Troffer, condend Ballast 2-F40/T12/RS/CW	Standard believe, E. Lamps Z'x4' Recessed Fluorescent Troffer,	Standard Ballast, 4-F40/112/ห3/CW	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW	Lamps 2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps
	OTY.		9	9			٥	2	4	2	2	ις
) LOEV SEBVED		Office - 210	Office - 210A	100		Office - 211A	Reception - 212	Office - 212A	Office - 212B	Office 212C	Office - 213

		Т			<u> </u>				·- I	<u>-</u>		
	UAL	MCF										
	ANNUAL	KWH	674	874	899	1,677	839	. 899	899	899	899	5,032
	ES	WKS	52	52	52	52	52	52	52	52	52	52
	OPER. TIMES	DAYS	ıΩ	7	5	7	7	5	5	5	5	7
	Ö	HRS	თ	24	б	24	24	6	6	6	9	24
			} -	≥	≥	>	*	W	3	≯	>	3
	AREA	LOAD	288	100	384	192	96	384	384	384	384	576
TF-LSTC	CoE		20	5	50	20	20	50	50	50	50	10
DR: HELST 1995	ACTUAL	<u>ნ</u>	29	10	82	23	40	97	76	82	80	26
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC October 10 - 13, 1995	CONTROL		Local Switch	Local Switch	Local Switch	Local Switch	Local Switch	Local Switch	Local Switch	Local Switch	Local Switch	Breaker
	끭		3	>	>	>	3	3	>	>	3	>
HTING	FIXTURE	LOA	96	100	96	96	96	192	192	192	192	96
DIT	FIXTURE DESCRIPTION		2x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	Lampholder, 1-100W/A Lamp	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps			
	QTY.		က	-	4	2	-	7	2	2	2	ဖ
	AREA SERVED		Office - 215	Janitor - 214	Office - 217	Mens Restroom - 216	Womens Restroom - 218	Office - 219	Office - 221	Office - 222	Office - 220	Corridor - 300

						Т	I				
	MCF	:									·
	KWH	839	6,709	3,355	4,193	6,709	5,032	50,319	6,709	3,355	6,709
	WKS	52	52	52	52	52	52	52	52	52	52
	OPER. TIMES S DAYS V	7	7	7	7	7	7	2	7	7	7
	RS A	24	24	24	24	24	24	24	24	24	24
		>	>	≥	3	×	×	3	≯	8	8
	AREA LOAD	96	768	384	480	768	576	5,760	768	384	768
F-LSTC	CoE FC	30	50	50	50	50	50	50	50	20	20
R: HELST 1995	ACTUAL FC	Light Out	52	38	65	65	40	61	92	40	9/
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC October 10 - 13, 1995	CONTROL	Local Switch	Local Switches	Local Switch	Local Switch	Local Switch					
		3		8	3	>	3	3	3	3	3
HTING E	FIXTURE	96	192	192	96	192	192	192	192	192	192
ĐIT	FIXTURE DESCRIPTION	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps	2x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW Lamps			
	QTY.	-	4	8	က	4	е	30	4	2	4
	AREA SERVED	Copy Room - 308	Office - 312	Office - 309	Office - 307	Office - 305	Office - 304	VAX - 301	Office - 306	Office - 303	Office - 302

		-	INC FOLLIS	E FOLIIPMENT LIST FOR: HELSTF - LSTC	R: HELSTF	LSTC						
				October 10 - 13, 1995	995			10	OPER TIMES	S	ANNOAL	
	OTY.	FIXTURE DESCRIPTION	FIXTURE	CONTROL	ACTUAL FC	병요	AREA	HRS C	DAYS	WKS	KWH	MCF
	,	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW	192 W	Local Switch	53	20	384 W	24	7	52	3,355	
Office - 310	'	Lamps	i	w.	62	50	1,728 V	W 24	7	52	15,096	
Office - 311	თ	Standard Ballast, 4-F40/T12/RS/CW	761				\			53	3,355	
Office - 313	2	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW	192 W	Local Switch	33	20	384	W 24	\ 	3		
		2'x4' Recessed Fluorescent Troffer,	192 W	Local Switch	74	20	576	W 24		52	5,032	
Office - 314	က	Standard paliast, 1 to 1						<u> </u>		5	1,677	
340 5.50	-	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 4-F40/T12/RS/CW	192 W	/ Local Switch	4	20	192	W 24	<u> </u>	3	-	
CIC - acid		Lamps		-	\ \		9	24		52	2,516	-
	er.	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW	96	W Breaker	28	20	788 788	N				
Stairs - 223	,	Lamps					,		7	- 52	10,064	
Oseridor - 230	12	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW	96	*		9	1,132			_		
	_	2x4' Recessed Fluorescent Troffer,	9	T 3	9	20	480	3	24 7	25	4,193	
Office - 230A	ۍ 	Standard Ballast, 2-F40/T12/RS/CW Lamps		-				-	-	-	2 255	
	-	2'x4' Recessed Fluorescent Troffer,	96	*	09 	20	384	3	24 7	52	000,0	
Office - 230B		Standard barrest, E. T. Lamps	-	\neg		-	-	-	7	52	2,516	
	-	2'x4' Recessed Fluorescent Troffer,	96 ×	8	09	20	 	 }	7 7			
Office - 230C	ო	Lamps	-	7		_	-		<u> </u>			

Т	\top					T										
AL ::	MC D															
ANNO	KWH	2,516	3,355	2,516	2,516	2 7.16	21.7	2,516		2,516	15,934		2,516	2 516	2,7	
	NKS	52	52	52	52	5	76	52		52	52		25		7c	
2. TIMES	AYS			7	7		~	7		7	7		7	,	<u> </u>	
OPEF	4RS D	24	24	24	24		24	24		24	24		24			
-	1	>	~	3	3			M		≥	≥		≯		3	
ARFA	LOAD	288 \	384	288	288		288	288		288	1.824		288	:	288	
1000	를 C	20	20	20	20		20	50		50	05	}	50		0	
2	FC AL	09	09	09	08		09	09		09	2	F	58		38	
per 10 - 13, 199			al Switches	1					. — — —		3	Local Switch	Breaker		Breaker	
톙								T >						\top	3	7
	IXTURE LOAD	M 96	M 96	M 96			N 96			96	-	ļ	96		96	
	FIXTURE DESCRIPTION F	scent Troffer, 0/T12/RS/CW	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW	Lamps 2'x4' Recessed Fluorescent Troffer, chandart Ballast, 2-F40/T12/RS/CW	Lamps 2'x4' Recessed Fluorescent Troffer,	Standard Ballast, 2-F40/ 172/KS/CVV Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW	2x4' Recessed Fluorescent Troffer,	Standard Damas, 21 12 15	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW	Lamps Lamps Lamps Lamps Lamps Lamps Lamps Lamps Lamps Lamps	Standard Ballast, 2-F40/T12/RS/CW	1'x4' Surface Wraparound Fluorescent. Standard Ballast, 2-F40/T12/RS/CW	Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW	Lamps
	ату.	п	4		,	ი	ო		m	6.		19	6	,		
	AREA SERVED	Office - 230D	OHICE - 230F	3	Office - 230F	Office - 230G	Office - 230H		Office - 2301	1066 55330	Office - 2000	Storage - 330	XCC :: 10	Stalf - 224	Corridor - 231	22.500
	AREA OPER, TIMES ANNUAL	October 10 - 13, 1995 OCTOBER TIMES OTY. FIXTURE DESCRIPTION FIXTURE CONTROL ACTUAL COE AREA OPER TIMES FC FC LOAD HRS DAYS WKS KWI	October 10 - 13, 1995 QTY. FIXTURE DESCRIPTION FIXTURE CONTROL ACTUAL CoE AREA OPER. TIMES ANNUAL LOAD LOAD 2'x4' Recessed Fluorescent Troffer, 96 W 96 W 96 W 24 7 52 2,516	October 10 - 13, 1995 QTY. FIXTURE DESCRIPTION LOAD 2.x4' Recessed Fluorescent Troffer, 2	October 10 - 13, 1995 ANNUAL ACTUAL CoE AREA OPER. TIMES ANNUAL ANNUAL ACTUAL CoE LOAD HRS DAYS WKS KWH KWH Lamps Standard Ballast, 2-F40/T12/RS/CW 96 W Local Switches 60 50 288 W 24 7 52 2,516 2	October 10 - 13, 1950	October 10 - 13, 1950	October 10 - 13, 1950 ANNUAL COF AREA OPER, TIMES ANNUAL ACTUAL COF LOAD HRS DAYS WKS KWH	Coctober 10 - 13, 1950	Coclober 10 - 13, 1950 AND LANDAR CONTROL ACTUAL CoE LOAD HRS DAYS WKS NWH	Ottober 10 - 15, 1930	ATTIVITE DESCRIPTION	Colorer 10 - 13 Searched Ballest, 2-4-OfT-2RSCW Searched Ballest, 2-	Control of the cont	OTTY	Control Cont

		ANNUAL	KWH			19,289	13,418	ွှ		0 626	
		-	_	 	-		<u> </u>	3,276		1,188,959	
		MES	S WKS			Z 	52	- 52			
		OPER. TIMES	DAYS		ŀ	`	7	2			
		0	HRS	24	5	7 7	24	24			
		Α.	۵	≯	747		≥	3	\dagger		
O		AREA	LOAD	929	000	7,200	1,536	375		151,359 W	
TF - LST		L.	FC	20	0,5	3	. 50	N/A			
OR: HELS	1995	ACTUAL	Ξ.	Closed	08	3	Closed	N/A			
LIGHTING EQUIPMENT LIST FOR: HELSTF - LSTC	October 10 - 13, 1995	CONTROL		Local Switch	Local Switch		Local Switch	Breaker			
HTING EQU		FIXTURE	LOAD	М 96	M 96	1	M 96	25 W			
PIO		FIX ORE DESCRIPTION		2x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW	Lamps	2'x4' Recessed Fluorescent Troffer, Standard Ballast, 2-F40/T12/RS/CW Lamps	Wall Exit Sign, Incandescent Lamps			
	À			6	23		16	5		-	
	APEA SEBVED	ONE OF VED		Office - 231A	Office - 231B		Microvax - 231C	Exits		TOTAL ENERGY USE	

BUILDING DESCRIPTION

NAME: Test Cell 1 (TC-1)

USE: Laser systems testing facility.

GROSS AREA (SQ.FT.): 19,329 STORIES: 4 DATE OF SURVEY: 10/10/95

DATE OF CONSTRUCTION: 1982

STRUCTURE: Steel and masonry

EXTERIOR WALLS: Concrete masonry units with 3" fiberglass batt insulation on first and second levels, un-insulated steel siding on third and fourth (PT tower).

<u>ROOF:</u> Flat built-up roof with 6" rigid insulation over second level, steel panels over fourth level (PT tower).

FLOOR CONSTRUCTION: 6" slab on grade, concrete on metal deck for all upper floors.

FLOOR FINISH: Sealed concrete and asphalt tile.

CEILINGS: None.

WINDOWS: None.

<u>COOLING EQUIP</u>: Multiple single zone air handling units, all served by two central water chillers in Test Cell 2 building.

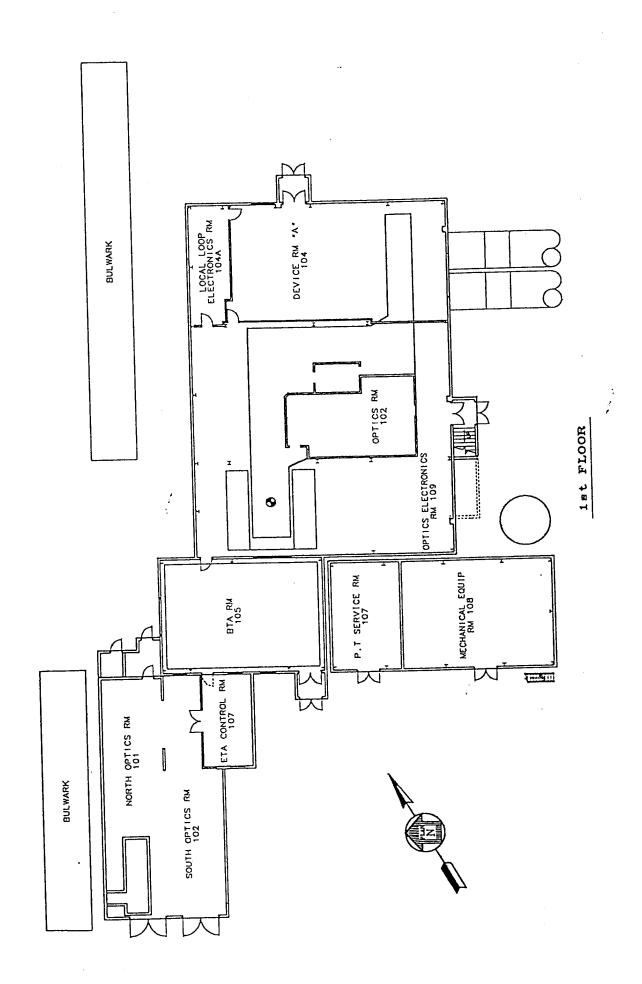
<u>HEATING EQUIP:</u> See cooling equipment above. All units are served by two central boilers in Test Cell 2 building.

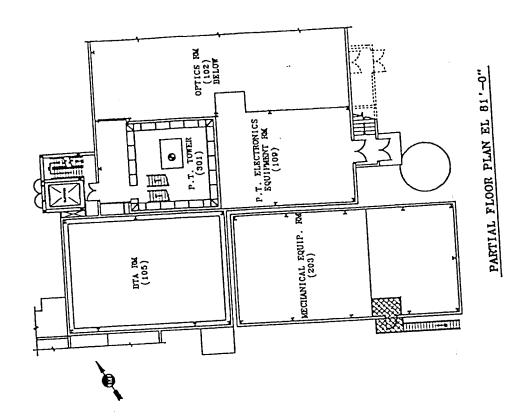
<u>LIGHTING</u>: Mainly high pressure sodium fixtures with some fluorescent lighting in control rooms and other areas.

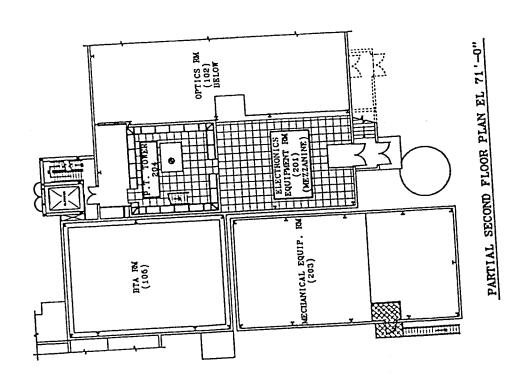
DOMESTIC WATER HEATING: None.

OTHER: Electronic test monitoring and control equipment, as well as personal computers scattered throughout building. Also various laser systems equipment in many areas of building.

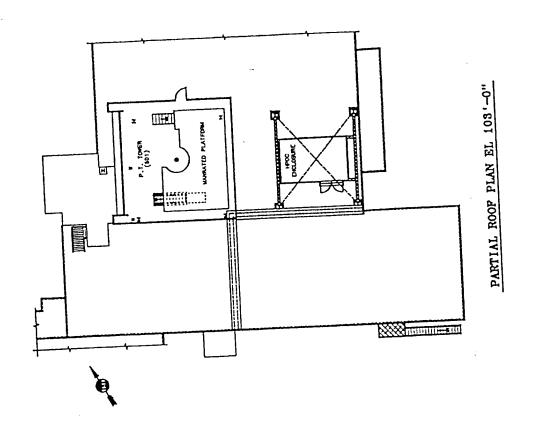
<u>REMARKS</u>: Attempts to maintain precise temperature and humidity conditions 24 hours a day add to excessive energy consumption in building.

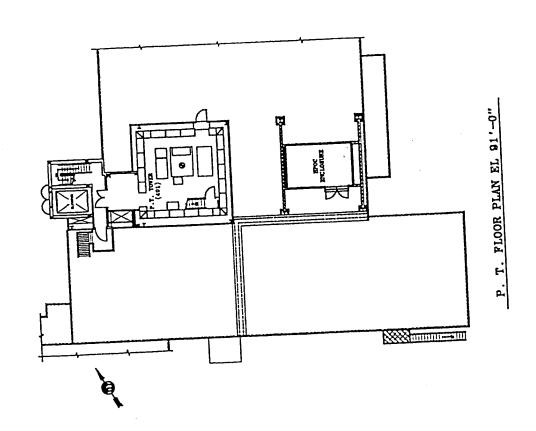






F-34





F-35

		HVAC EQUIPMEN	HVAC EQUIPMENT LIST FOR: HELSTF Facility, Test Cell #1	acility, Test Cell	#1			
ITEM	QTY.	DESCRIPTION	AREA SERVED `	FULL	OPERATION TIMES HRS DAYS WKS	ATION TIMES DAYS WKS	ANNUAL USE KWH GAI	SE
Air Handling Unit AH-1 Hot Water Heat		McQuay RD5802BY 10 hp single zone	Optics Room	8.7 KW	by computer model	model	76,212	
Air Handling Unit AH-2 Hot Water Heat	1	McQuay RD5708BY 3 hp single zone	P.T. tower	2.1 KW	by computer model	model	18,396	
Air Handling Unit AH-3 Hot Water Heat	1	McQuay RD5800BY 10 hp S.fan, 5 hp R. fan single zone	P.T. tower 204, 301, 401	10.3 KW	by computer model	model	90,228	
Air Handling Unit AH-4 Hot Water Heat	1	Carrier 5 hp S.fan, 2 hp R. fan single zone	N & S Optics Room 101 & 102	4.9 KW	by computer model	model	42,924	
Air Handling Unit AH-5 Hot Water Heat	_	Trane 7.5 hp single zone	BTA Room 105	4.1 KW	by computer model	model	35,916	
Air Handling Unit AH-51 Hot Water Heat	-	York 7.5 hp, 5892 cfm single zone	Device Room 104	4.9 KW	by computer model	model	42,924	
Air Handling Unit AH-52 Hot Water Heat	~	York 3 hp, 3344 cfm single zone	ETA Control Room	1.7 KW	by computer model	model	14,892	-•
Air Handling Unit AH-53 Hot Water Heat	+	York 15 hp, 10,758 cfm single zone	Optics Room 102	8.6 KW	by computer model	model	75,336	
Electric Humidifier EH - 53	1	Carnes HCJD 138 lbs/hr.	Optics Room 102 AH-53	22.4 KW	8 7	52	65,229	
Air Handling Unit AH-54 Hot Water Heat	~	York C53365HFCLD-Y 7.5 hp, 15,667 cfm single zone	Optics Electr. Rm. 109	4.4 KW	by computer model	model	38,544	
Air Handling Unit AH-55 Hot Water Heat	-	York C52175HFCLP-Y 7.5 hp, 10,386 cfm single zone	Optics Equip. Rm. 201	4.1 KW	by computer model	model	35,916	
Evap. Cooler EC-51	-	Sun #E63022 5 hp, 15,700 cfm	room 107, PT service	3.0 KW	24 7	26	13,104	

Cell # 1 OPERATION TIMES ANNUAL L	OTY. DESCRIPTION AREA SERVED LOAD HRS DAYS WKS	W uns	2 Ton 2 Ton 2 Ton 2 2	1 2 ton HPOC Enclosure 10 KW 8 7	data collection, 480 V 24 7 52	on UPS feeder.	14,560 0	HEATING 3,494 0	COOLING 93,242	FANS	192,192	AL MISC	
			Evap. Cooler EC-52	Packaged Rooftop Unit	Heat Pump	Electronics Equipment Data Collection		TOTAL HEATING	TOTAL COOLING	SAPA FANS		TOTAL MISC	

KVA			6.6	2.8	8.1	3.9	4.3	6 .	5.0	6.0	2.0	11.2	5.4	5.0	65.5	
KW	<u> </u>		8.7	2.1	7.1	3.2	3.5	1.4	4.1	4.9	1.7	8.6	4.4	4.1	53.8	
	_	╁						71.9%	61.2%	75.0%	55.6%	64.3%	%0.59	54.5%		
%	: T	+	91.7%	77.8%	78.0%	65.3%	72.2%	71.5	61.	75.	55.		65	54		
IAI		AMPS	27.5	3.5	9.75	4.7	5.2	2.3	و	7.5	2.5	13.5	6.5	g		
ACTUAL	2	VOLTS	208	460	480	480	480	480	480	460	460	480	480	480		
			85.6%	81.5%	85.6%	84.0%	84.0%	78.0%	86.5%	85.5%	74.7%	87.5%	85.5%	76.9%		
746		ᇤ	0.875	0.770	0.875	0.820	0.820	0.750	0.830	0.821	0.835	0.764	0.821	0.830	0.821	
	NAMEPLATE	AMPS	30.0	5.4	12.5	7.2	7.2	3.2	9.8	10.0	4.5	21.0	10.0	11.0		
DATE SURVEYED: October 10 - 13, 1995		VOLTS	500	460	460	460	460	460	460	460	460	460	460	460		
D. October	HASE		m	က	e e	6	6	6	8	6	m	e e	en en	6		
DATE SURVEYED: October 10 - 13, 1995	웊		5	n	5	S.	5	2	7.5	7.5	6	15	7.5	7.5		
DATE	AREA SERVED		Optics Room	P.T. Tower	700	P.I. Tower, 201, 301,		South Optics - 102	BTA Room 105	Device Room 104	ETA Control Room	Optics Room 102	Optics Elect. Room 109	Optics Elect. Room 201		
	NOITGIACOST		Air Handling Unit	Air Handling Unit	Air Handling Unit - Supply Fan	Air Handling Unit - Return Fan	Air Handling Unit - Supply Fan	Air Handling Unit - Retum Fan	Air Handling Unit	Air Handling Unit						
	250	<u>.</u>	-	-	-	-	-	-	-	-	-	-	-	-		
	440	LEM	AH-1	AH-2		AH-3		AH-4	AH-5	AH-51	AH-52	AH-53	AH-54	AH-55	TOTAL	#

[T	П		T.					-			
	UAL	MCF					ì					
	ANNOAL	KWH	37,740	25,160	3,494	7,548	839	839	874	48,223	5,242	1,747
	S	WKS	52	52	52	52	52	52	52	52	52	25
	OPER TIMES	DAYS	7	7	2	7	7	7	7	7	7	7
	Ğ	HRS	24	24	24	24	24	24	24	24	24	24
			3	>	≥	3	W	8	>	>	≥	≥
L 1	ABEA	LOAD	4,320	2,880	400	864	96	96	100	5,520	009	200
EST CEL	190	불	50	20	50	50	5	10	10	90	20	10
IELSTF - T	995 VCT-171	AC UAL	92	43	43	89	Closed	25	20	8	81	29
LIGHTING EQUIPMENT LIST FOR: HELSTF - TEST CELL 1	_ -	CONTROL	Local Switches	Local Switches	Local Switch	Local Switch	Local Switch	Local Switch	Local Switch	Breakers	Breakers	Breaker
MEN	하	щ	>	3	3	3	3	>	≥	3	3	3
G EQUIP	į	FIXTURE	96	96	200	96	96	96	100	460	100	200
LIGHTIN		FIXTURE DESCRIPTION	1'x4' Pendent Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	1'x4' Pendent Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/C/W Lamps	2'x2' Surface HID, 1-150W/HPS Lamp	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	Enclosed/Gasketed Lampholder, 1- 100W/A Lamp	Pendent High-Bay HID, 1-400W/HPS Lamp	Pendent High-Bay Incandescent, 1- 100W/A Lamp	Enclosed/Gasketed Lampholder, 1- 200W/A Lamp
		QTY.	45	30	2	6	-	-	_	12	ø	-
		AREA SERVED	North Optics Room - 101	900 G 900 M	30din Opics Nooii -	ETA Control Room - 103	Storage - 104	Vestibule - 105	Vestibule - 101		Optics Koom -	Vestibule - 103

		LIGHTING	EQUIPIV	EQUIPMENT LIST FOR: HE	HELSTF - TEST CELL	T CELL	←			i i	ANNA	IA.
OB/VOID ATO	OTY.	FIXTURE DESCRIPTION		CONTROL ACT	C CAL	SoE FC	AREA LOAD	HRS	OPER. IIMES S DAYS V	WKS	KWH	MCF
ANEX CENTER OF THE CENTER OF T	30	Pendent High-Bay HID, 1-400W/HPS	460 W	Breakers	15	20	13,800 V	W 24		- 25	120,557	
Device Room - 104	ဖ	Pendent High-Bay Incandescent, 1-	200 W	Breaker	15	20	1,200 \	W 24	7	- 25	10,483	
Local Loop Electronics	6	4' Pendent Industrial Fluorescent, Standard Ballast, 4-F40/T12/RS/CW	192 W	W Local Switches	86	50	1,920	W 24		- 25	16,773	
Room - 104A		Lamps Lamps Pendent High-Bay HID, 1-400W/HPS	460 W	Breakers	0	20	7,360		24 7	- 52	64,297	
та Вост -	 9 	Lamp						+-	-	-	200	
105	2	Pendent High-Bay Incandescent, 1- 200W/A Lamp	200 W	Breaker	9	20	400	3	24 7	25	484.0	
		1- Tabledder 1-	3	Broaker	29	10	200	3	24 7	- 52	1,747	
Vestibule - 106	τ-	Enclosed/Gasketor Lamp 200W/A Lamp	007						-	-	-	
		Pendent High-Bay HID, 1-250W/HPS	300 W		99	20	1,200		24 7	52	10,483	
et Service Room -		Lamp		Local				+			1 747	
107	-	Pendent High-Bay Incandescent, 1-	7 200	M	20	20	200		24	79 - 2		
	.		-			{	0	3	24	7 52	5,242	
	2	Pendent High-Bay HID, 1-250W/HPS Lamp	300	M	 20	ი 	8	:			_	-
Mechanical Equipment-		Dandent High-Bay Incandescent, 1-	000	Switch	20	20	200	3	24	7 52	2 1,747	
		200W/A Lamp							_	-		

FIX LOAD			lE i	G EQUIPMI	اتمننا	HELSTF - TEST CELL 1 1995	EST CEL	L 1 ARFA		OPER. TIMES	ES	ANNUA	UAL
21 Standard Ballast, 3-F40/T12/RS/CW 151 W Local Switch 40 50 3,171 W 24 7 5 5 Standard Ballast, 3-F40/T12/RS/CW 96 W Local Switch 22 10 192 W 24 7 5 5 Standard Ballast, 2-f40/T12/RS/CW Lamp 8 W Local Switch 8 8 50 1,800 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 300 W Local Switch 30 15 1,200 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 300 W Local Switch 30 15 1,200 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 300 W Local Switch 30 15 1,200 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 300 W Local Switch 30 15 800 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 300 W Local Switch 30 15 800 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 460 W Local Switch 30 15 800 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 460 W Local Switch 30 15 800 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 460 W Local Switch 30 15 800 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 460 W Local Switch 30 15 800 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 460 W Local Switch 30 15 800 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 460 W Local Switch 30 15 800 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 460 W Local Switch 30 15 800 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 460 W Local Switch 30 15 800 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 460 W Local Switch 30 15 800 W 24 7 5 5 Fendent High-Bay Hich 1-400WHPS 460 W Local Switch 30 15 800 W 24 7 7 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	AREA SERVED	QTY.	FIXTURE DESCRIPTION	FIXTURE	CONIROL	AC OAL	3 단	LOAD	HRS	DAYS	WKS	KWH	MCF
4 Standard Ballast, 2-FagrTr2/R3CW 96 W Local Switch 40 50 384 W 24 7 5 5 Standard Ballast, 2-FagrTr2/R3CW 96 W Local Switch 22 10 192 W 24 7 5 Standard Ballast, 2-FagrTr2/R3CW Lamps 6 1'x4' Surface Wiraparound Fluorescent, Standard Ballast, 96 W Local Switches 15 15 576 W 24 7 5 Standard Ballast, 2-FagrTr2/R3/CW Lamp 2 Pendent High-Bay HID, 1-250W/HPS 300 W Local Switch 88 50 1,800 W 24 7 5 Standard High-Bay HID, 1-250W/HPS 300 W Local Switch 30 15 1,200 W 24 7 5 Standard High-Bay HID, 1-250W/HPS 460 W Local Switch 30 15 1000 W 24 7 5 Standard High-Bay HID, 1-250W/HPS 460 W Local Switch 30 15 800 W 24 7 5 Standard High-Bay HID, 1-200W/HPS 460 W Local Switch 30 15 800 W 24 7 5 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 5 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 5 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 5 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 7 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 7 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 7 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 7 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 7 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 7 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 7 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 7 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 7 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 7 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 7 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 7 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 7 Standard High-Bay Incandescent, 1 200 W Local Switch 30 15 800 W 24 7 7 Standard High-Bay Incandescent, 1 200 W Local Switch 30 20 20 20 20 20 20 20 20 20 20 20 20 20		21	4' Surface Industrial Fluorescent, Standard Ballast, 3-F40/T12/RS/CW Lamps	ł		40	50			7	52	27,702	
2 Standard Ballast, 2-F40/T12/RS/CW 6 1'x4' Wall Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamp 6 1'x4' Wall Fluorescent, Standard Ballast, 96 W Local Switches 15 15 576 W 24 7 6 6 Pendent High-Bay HID, 1-250WiHPS 300 W Local Switch 88 50 1,800 W 24 7 6 2 Pendent High-Bay HID, 1-250WiHPS 300 W Local Switch 30 15 1200 W 24 7 8 4 Pendent High-Bay HID, 1-400WiHPS 460 W Local Switch 30 15 820 W 24 7 8 4 Pendent High-Bay HID, 1-400WiHPS 460 W Local Switch 30 15 800 W 24 7 8 4 Pendent High-Bay HID, 1-400WiHPS 460 W Local Switch 30 15 800 W 24 7 8 5 Pendent High-Bay HID, 1-200WiHPS 460 W Local Switch 30 15 800 W 24 7 8 6 Pendent High-Bay HID, 1-400WiHPS 460 W Local Switch 30 15 800 W 24 7	Optics Electronics Room - 109	4	4' Surface Industrial Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps		l	40	50	ļ		7	52	3,355	
6 1'x4' Wall Fluorescent, Standard Ballast, 96 W Local Switches 15 15 576 W 24 7 5 5 Pendent High-Bay HID, 1-250W/HPS 300 W Local Switch 88 50 1,800 W 24 7 5 5 Pendent High-Bay HID, 1-250W/HPS 300 W Local Switch 30 15 1,200 W 24 7 5 5 Pendent High-Bay HID, 1-400W/HPS 300 W Local Switch 30 15 920 W 24 7 5 5 Pendent High-Bay HID, 1-400W/HPS 460 W Local Switch 30 15 920 W 24 7 5 5 5 Pendent High-Bay Incandescent, 1- 200 W Local Switch 30 15 920 W 24 7 5 5 5 5 Pendent High-Bay Incandescent, 1- 200 W Local Switch 30 15 920 W 24 7 7 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Elevator Vestibule - 110	7	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	1	i	22	10			7	52	1,677	
6 Pendent High-Bay HID, 1-250W/HPS 300 W Local Switches 88 50 1,800 W 24 7 4 2 Pendent High-Bay Incandescent, 1- 200 W Local Switch 88 50 400 W 24 7 4 4 Pendent High-Bay HID, 1-250W/HPS 300 W Local Switch 30 15 1,200 W 24 7 4 2 Pendent High-Bay HID, 1-400W/HPS 460 W Local Switch 30 15 920 W 24 7 4 4 Pendent High-Bay Incandescent, 1- Lamp 200 W Local Switch 30 15 920 W 24 7 4 Pendent High-Bay Incandescent, 1- 200 W Local Switch 30 15 800 W 24 7	Stairs	ø	1'x4' Wall Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamp	96	Local Switches		15			7	52	5,032	ļ
2 Pendent High-Bay Incandescent, 1- 200 W Local Switch 88 50 400 W 24 7 5 5 200 W Local Switch 30 15 1,200 W 24 7 5 5 9 5 6 6 6 6 6 6 6 7 5 5 6 6 6 6 6 6 6 6 6		ဖ	Pendent High-Bay HID, 1-250W/HPS Lamp	1	Local Switches		50	!		7	52	15,725	
4 Pendent High-Bay HID, 1-250W/HPS 300 W Local Switch 30 15 1,200 W 24 7 Pendent High-Bay HID, 1-400W/HPS 460 W Local Switch 30 15 920 W 24 7 4 Pendent High-Bay Incandescent, 1- 200 W Local Switch 30 15 800 W 24 7	Electronics Equipment Room - 201	2	Pendent High-Bay Incandescent, 1- 200W/A Lamp	1		88	90			7	52	3,494	
2 Pendent High-Bay HID, 1-400W/HPS 460 W Local Switch 30 15 920 W 24 7 460 W Local Switch 30 15 800 W 24 7 4 Pendent High-Bay Incandescent, 1- 200 W Local Switch 30 15 800 W 24 7		4	Pendent High-Bay HID, 1-250W/HPS Lamp			30	15	İ		7	52	10,483	
Pendent High-Bay Incandescent, 1- 200 W Local Switch 30 15 800 W 24 7	Mechanical Room - 203	7	Pendent High-Bay HID, 1-400W/HPS Lamp	Į.	<u> </u>	30	15			7	52	8,037	
		4	Pendent High-Bay Incandescent, 1- 200W/A Lamp		<u> </u>	30	15			7	52	6,989	·

$\neg \top$	\prod							1				
3	MCF								·			
	KWH N	8,387	3,494	1,677	10,064	1,677	9,225	1,677	6,709	16,074	3,931	
	WKS	52	52	52	52	52	52	52	52	52	52	
	OPER. TIMES	7	7	7	7	7	7	7	7	7		
	OPE HRS	24	24	24	24	24	24	24	24	24	12	
	L_	>	3	}	3	3	3	≥	≥	>	3	
-	AREA	096	400	192	1,152	192	1,056	192	168	1,840	006	
ST CELL	S 22	30	30	.0	30	10	30	10	90	30	N/A	
HELSTF - TEST CELL 1995	ACTUAL	9	ω	20	23	20	40	50	20	Open	N/A	
LIGHTING EQUIPMENT LIST FOR: HELS	CONTROL	Local Switch	Local Switch	Local Switch	Local Switch	Local Switch	Local Switch	Local Switch	Local Switch	Local Switch	Photocell	
AENT Ogg	<u></u>		3	3	3		3	3		3	3	٦,
EQUIPA	FIXTURE	N 96	V 001	7 96	96	96	96	96	192	460	150	
LIGHTING	FIXTURE DESCRIPTION	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	Lampholder, 1-100W/A Lamp	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW Lamps	1'x4' Surface Wraparound Fluorescent, Standard Ballast, 2-F40/T12/RS/CW	2'x4' Surface Fluorescent Wraparound, Standard Ballast, 4-F40/T12/RS/CW	Wall HID, 1-400W/HPS Lamp	Wall Incandescent, 1-150W/HPS Lamp				
	OTY.	10	4	2	12	2	7	2	4	4	ø	
	AREA SERVED		P.T. Tower - 204	Elevator Vestibule - 205	P.T. Tower - 301	Elevator Vestibule - 302	P.T. Tower - 401	Elevator Vestibule - 402	HPOC Enclosure	P.T. Tower - 501	Building Exterior	

		T	\Box		T		
		ANNUAL	MCF				0
		AN	KWH	9,610	2,490	4,805	530,590
		ES	WKS	52	52	52	
		OPER. TIMES	DAYS	2	7	7	
		Ō	HRS	12	12	24	
		_)	W	3	≥	≥
11.1		AREA	LOAD	2,200 W	570 W	550	62,571 W
TEST CE		CoE	<u></u>	A/N	N/A	N/A	
HELSTF -	1995	ACTUAL	은	N/A	N/A	N/A	
LIGHTING EQUIPMENT LIST FOR: HELSTF - TEST CELL 1	October 10 - 13, 1995	CONTROL ACTUAL		Photocell	Photocell	Breaker	
PME	Ŏ	RE		3	3	>	
NG EQUI		FIXTURE	LOAD	200 W	92	25	
LIGHTII		FIXTURE DESCRIPTION		Wall HID, 1-150W/HPS Lamp	Wall HID, 1-70W/HPS Lamp	Wall Exit Sign, incandescent Lamps	
		QTY.		7	9	22	
		AREA SERVED		Building Exterior	Building Exterior	Exits	TOTAL ENERGY USE

BUILDING DESCRIPTION

NAME: Test Cell 2 (TC-2)

<u>USE</u>: Central thermal energy plant for test cell area buildings.

GROSS AREA (SQ.FT.): 5,133 STORIES: 2 DATE OF SURVEY: 10/10/95

DATE OF CONSTRUCTION: 1982

STRUCTURE: Steel and masonry.

EXTERIOR WALLS: Concrete masonry units

ROOF: Flat built-up roof with 6" rigid insulation.

FLOOR CONSTRUCTION: 6" concrete slab on grade.

FLOOR FINISH: Sealed concrete.

CEILINGS: Open beams.

WINDOWS: None.

COOLING EQUIP: None.

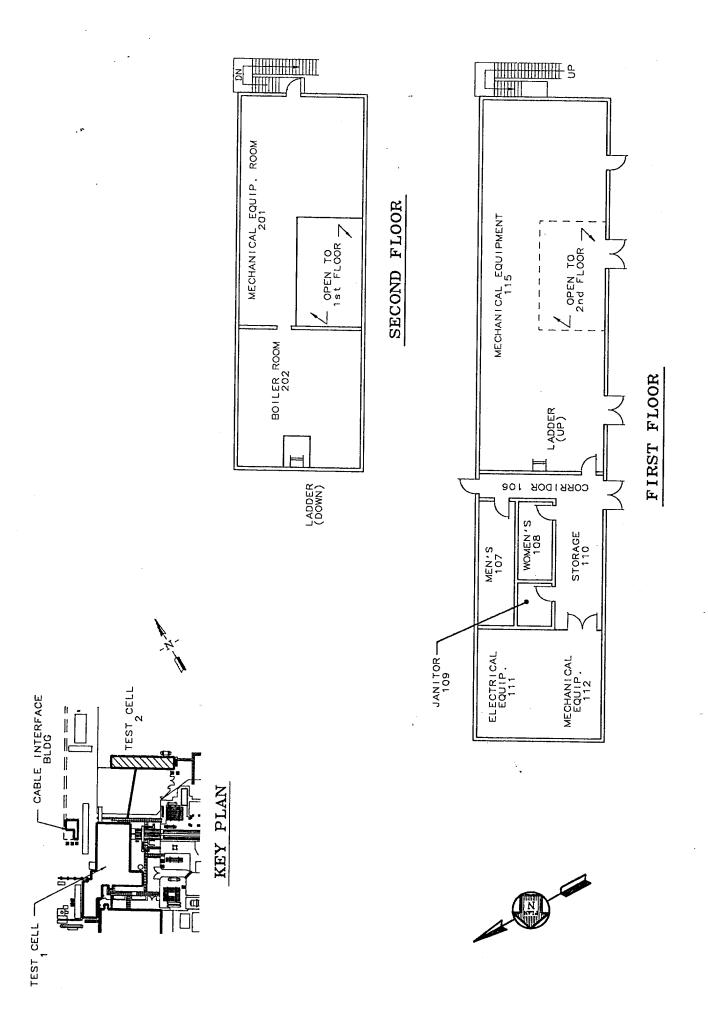
HEATING EQUIP: None.

<u>LIGHTING</u>: Mostly high pressure sodium fixtures with some fluorescent lighting in areas.

<u>DOMESTIC WATER HEATING:</u> Small residential electric water heater for restrooms only.

OTHER: Central chiller and boiler equipment, see HVAC Equipment List for descriptions. Also houses process water production equipment which is operated periodically.

<u>REMARKS</u>: This building is included in the study because the central plant equipment inside is used to serve the heating and cooling requirements of Test Cell 1. Therefore, only ECOs which are related to this central plant equipment will be considered in the study.



CTV. DESCRIPTION AREA SERVED FULL			HVAC EQUIPME	EQUIPMENT LIST FOR: HELSTF Facility, Test Cell #2 January 2, 1996	acility, Test Cell #2			
York OT A2A181-OGB	ITEM	aty.		AREA SERVED	FULL	AATION T	MAL	USE
1 York OT AZAB1-OGB					LOAD	\dashv	KWH	GAL
1 LTJ compr., R-11, 150.8 tons TC-1 building TC-1 buil			York OT A2A1B1-OGB					
1 1 1 1 1 1 1 1 1 1	Water Chiller	-	LTJ compr. , R-11, 150.8 tons	chilled water	141.0 KW	by computer model	486,281	
York OT A2A181-OGB Chilled water 141.0 KW	CH - 51		25% ethylene glycol sol.	TC-1 building				
1 LTH comptr. R-11, 150.8 tons Chilled water 141.0 KW			York OT A2A1B1-OGB					
1	Water Chiller	-	LTH compr., R-11, 150.8 tons	chilled water	141.0 KW	by computer model	0	
Lincoln	CH - 52		25% ethylene glycol sol.	TC-1 building				
1 40 hp Chilled water 27.3 KW 1 410 gpm, 200' hd CH-51 1 40 hp CH-51 1 410 gpm, 200' hd CH-52 1 U.S. Electric motor Condenser water 13.2 KW 525 gpm, 70' hd CH-52 1 U.S. Electric Motor CH-52 1 T.5 HP TC-1 building Water 6.4 KW 80 gpm, 110' hd TC-1 building water 7.2 KW 1 T.5 HP TC-1 building water 22.3 KW 1 T.5 HP TC-1 building water 27.5 KW			Lincoln					
10 gpm, 200 hd CH-51	Pump P-51	-	40 hp	chilled water	27.3 KW	by computer model	239,148	
Lincoln	Chilled Water		410 gpm, 200 ' hd	CH-51				
1 40 hp chilled water 28.7 KW 410 gpm, 200' hd CH-52 U.S. Electric motor condenser water 13.2 KW 525 gpm, 70' hd CH-51 Leeson 1 15 hp CH-51 U.S. Electric Motor heating water 6.4 KW 80 gpm, 110' hd TC-1 building U.S. Electric Motor heating water 7.2 KW 80 gpm, 110' hd TC-1 building U.S. Electric Motor heating water 7.2 KW 1425 gpm, 60' hd CT-51AB CONDENSER water 22.3 KW 1425 gpm, 60' hd CT-51AB Reliance Motor heating water 2.7 KW 1 3 HP Reliance Motor heating water 2.7 KW 80 gpm, 60' hd heating water 8.55			Lincoln					
10 gpm, 200 'hd	Pump P-52	-	40 hp	chilled water	28.7 KW	by computer model	0	
1 S. Electric motor condenser water 13.2 KW 525 gpm, 70' hd CH-51 Leeson CH-52 1 15 hp CH-52 255 gpm, 70' hd CH-52 U.S. Electric Motor CH-52 U.S. Electric Motor TC-1 building U.S. Electric Motor heating water 1 7.5 HP TC-1 building Vertical Turbine condenser water Vertical Turbine CT-51AB Reliance Motor Heating water 2.7 KW Reliance Motor Heating water 2.7 KW Reliance Motor Heating water 2.7 KW Reliance Motor Hea	Chilled Water		410 gpm, 200 ' hd	CH-52				
1 15 hp			U.S. Electric motor					
1 525 gpm, 70' hd	Pump P-60	_	15 hp	condenser water	13.2 KW	by computer model	115,632	
Leeson	Condenser Water		525 gpm, 70' hd	CH-51				
1 15 hp condenser water 10.5 KW 525 gpm, 70' hd CH-52 U.S. Electric Motor heating water 8.4 KW 80 gpm, 110' hd TC-1 building 1.5. Electric Motor Nertical Turbine 130 hp, 1st in cycle CT-51AB			Leeson					
525 gpm, 70' hd CH-52 U.S. Electric Motor heating water 6.4 KW 1 7.5 HP TC-1 building 7.2 KW 1 7.5 HP TC-1 building 7.2 KW 1 30 hp, 110' hd TC-1 building 7.2 KW 1 30 hp, 110' hd TC-1 building 7.2 KW 1 30 hp, 110' hd TC-1 building 7.2 KW 1 30 hp, 110' hd TC-1 building 7.2 KW 1 30 hp, 12 in cycle CT-51AB CT-51AB Vertical Turbine CT-51AB CT-51AB Netrical Turbine CT-51AB CT-51AB Netrical Turbine CT-51AB CT-51AB Reliance Motor B-51 CT-51AB Reliance Motor B-51 Reliance Motor Reliance Motor B-52 Reliance Motor 1 3 HP Heating water 2.7 KW 1 3 HP <td>Pump P-61</td> <td>-</td> <td>15 hp</td> <td>condenser water</td> <td>10.5 KW</td> <td>by computer model</td> <td>0</td> <td></td>	Pump P-61	-	15 hp	condenser water	10.5 KW	by computer model	0	
1 7.5 HP heating water 6.4 KW 80 gpm, 110' hd TC-1 building 7.2 KW 1 7.5 HP TC-1 building 7.2 KW 1 7.5 HP TC-1 building 7.2 KW 1 30 pp, 110' hd TC-1 building 7.2 KW 1 30 hp, 1st in cycle condenser water 22.3 KW 1 425 gpm, 60' hd CT-51AB CT-51AB 1 30 hp, 2nd in cycle CT-51AB 22.3 KW Reliance Motor Reliance Motor B-51 1 3 HP Reliance Motor B-51 1 3 HP Reliance Motor B-52	Condenser Water		525 gpm, 70' hd	CH-52				
1 7.5 HP heating water 6.4 KW B0 gpm, 110' hd TC-1 building Water 7.2 KW 80 gpm, 110' hd TC-1 building Wertical Turbine 130 hp, 1st in cycle CT-51AB Vertical Turbine 130 hp, 2nd in cycle CT-51AB CT-51AB CT-51AB Reliance Motor Heating water 2.7 KW B0 gpm, 60' hd B-51 B-51 Reliance Motor Heating water 2.7 KW B0 gpm, 60' hd B-51 B-51 Reliance Motor Heating water 2.7 KW B0 gpm, 60' hd B-52 B-51 Reliance Motor Heating water 2.7 KW B0 gpm, 60' hd B-52 B-52 B-52 B-53 B-54 B-55 B-55 B-55 B-55 B-55 B-55 B-55			U.S. Electric Motor					
80 gpm, 110' hd TC-1 building 1 7.5 HP heating water 7.2 KW 80 gpm, 110' hd TC-1 building 7.2 KW 1 30 hp, 1st in cycle condenser water 22.3 KW 1 425 gpm, 60' hd CT-51AB CT-51AB 1 30 hp, 2nd in cycle condenser water 22.3 KW 1 30 hp, 2nd in cycle CT-51AB CT-51AB Reliance Motor heating water 2.7 KW 80 gpm, 60' hd B-51 B-51 Reliance Motor heating water 2.7 KW 1 3 HP B-52	Pump P-63	-	7.5 HP	heating water	6.4 KW	by computer model	56,064	-
1 7.5 HP heating water 7.2 KW 80 gpm, 110' hd TC-1 building 7.2 KW Vertical Turbine condenser water 22.3 KW 1 425 gpm, 60' hd CT-51AB Vertical Turbine condenser water 22.3 KW 1 30 hp, 2nd in cycle condenser water 22.3 KW 1 30 hp, 2nd in cycle CT-51AB CT-51AB Reliance Motor heating water 22.3 KW 1 3 HP B-51 Reliance Motor 1 3 HP heating water 2.7 KW 1 3 HP B-52	Heating Water	;	80 gpm, 110° hd	TC-1 building		•		•
1 7.5 HP heating water 7.2 KW 80 gpm, 110' hd TC-1 building 7.2 KW 1 30 hp, 1st in cycle condenser water 22.3 KW 1 30 hp, 2nd in cycle condenser water 22.3 KW 1 30 hp, 2nd in cycle CT-51AB 22.3 KW 1 30 hp, 2nd in cycle CT-51AB 22.3 KW 1 3 HP heating water 2.7 KW 80 gpm, 60' hd B-51 B-51 Reliance Motor heating water 2.7 KW 1 3 HP B-52			U.S. Electric Motor					
80 gpm, 110' hd TC-1 building 1 30 hp, 1st in cycle condenser water 22.3 KW 1425 gpm, 60' hd CT-51AB 22.3 KW 1 30 hp, 2nd in cycle condenser water 22.3 KW 1 30 hp, 2nd in cycle CT-51AB 22.3 KW 1 3 HP heating water 2.7 KW 80 gpm, 60' hd B-51 2.7 KW Reliance Motor heating water 2.7 KW 1 3 HP heating water 2.7 KW 80 gpm, 60' hd B-52	Pump P-64	-	7.5 HP	heating water	7.2 KW	by computer model	0	-
1 30 hp, 1st in cycle condenser water 22.3 KW 1425 gpm, 60' hd CT-51AB 1 425 gpm, 60' hd condenser water 22.3 KW 1 425 gpm, 60' hd CT-51AB 22.3 KW 1 3 HP heating water 2.7 KW 80 gpm, 60' hd B-51 2.7 KW 1 3 HP heating water 2.7 KW 80 gpm, 60' hd B-52	Heating Water		80 gpm, 110' hd	TC-1 building				
1 30 hp, 1st in cycle condenser water 22.3 KW 1425 gpm, 60' hd CT-51AB 22.3 KW 1 30 hp, 2nd in cycle condenser water 22.3 KW 1 425 gpm, 60' hd CT-51AB 22.3 KW 1 3 HP heating water 2.7 KW 1 3 HP heating water 2.7 KW 80 gpm, 60' hd heating water 2.7 KW 80 gpm, 60' hd B-52			Vertical Turbine					
1425 gpm, 60' hd CT-51AB Vertical Turbine condenser water 1 30 hp, 2nd in cycle CT-51AB 1425 gpm, 60' hd CT-51AB 1 3 HP heating water 2.7 KW Reliance Motor B-51 Reliance Motor heating water 1 3 HP heating water 2.7 KW 80 gpm, 60' hd B-52	Pump P-65	-	30 hp, 1st in cycle	condenser water	22.3 KW	by computer model	195,348	
1 30 hp, 2nd in cycle condenser water 22.3 KW 1425 gpm, 60' hd CT-51AB 1 3 HP heating water 2.7 KW 80 gpm, 60' hd B-51 1 3 HP heating water 2.7 KW 1 3 HP heating water 2.7 KW 1 3 HP heating water 2.7 KW	Condenser Water		1425 gpm, 60' hd	CT-51AB				
1 30 hp, 2nd in cycle condenser water 22.3 KW 1425 gpm, 60' hd CT-51AB CT-51AB 1 3 HP heating water 2.7 KW 80 gpm, 60' hd B-51 heating water 2.7 KW 1 3 HP heating water 2.7 KW 80 gpm, 60' hd B-52 B-52			Vertical Turbine					
1425 gpm, 60' hd CT-51AB Reliance Motor heating water 2.7 KW 80 gpm, 60' hd B-51 Reliance Motor heating water 2.7 KW 1 3 HP heating water 2.7 KW 80 gpm, 60' hd B-52	Pump P-66	-	30 hp, 2nd in cycle	condenser water	22.3 KW	by computer model	0	
Reliance Motor	Condenser Water		1425 gpm, 60' hd	CT-51AB				
1 3 HP heating water 2.7 KW 80 gpm, 60' hd B-51 B-51 1 3 HP heating water 2.7 KW 80 gpm, 60' hd B-52			Reliance Motor					
80 gpm, 60' hd B-51 Reliance Motor heating water 2.7 KW 80 gpm, 60' hd B-52	Pump P-70	-	3 HP	heating water	2.7 KW	by computer model	23,652	
Reliance Motor	Heating Water		80 gpm, 60' hd	B-51				
1 3 HP heating water 2.7 KW 80 gpm, 60' hd B-52			Reliance Motor					
. 80 gpm, 60' hd	Pump P-71	-	3 HP	heating water	2.7 KW	by computer model	0	
	Heating Water		80 gpm, 60' hd	B-52				

		HVAC EQUIPMEN	QUIPMENT LIST FOR: HELSTF Facility, Test Cell #2	cility, Test Cell #2				!	
			January 2, 1996		OPERATION	OPERATION TIMES	AN	ANNUAL USE	
ITEM	αTY.	DESCRIPTION	AREA SERVED	LOAD	HRS DA	DAYS WKS	KWH	GAL	
Cooling Tower Fan	-	BAC model CFT-2420C	condenser water CH-51	5.3 KW	ру сотр	by computer model	30,475	2	
CT-51A Cooling Tower Fan	-	BAC model CFT-2420C	condenser water CH-52	5.3 KW	ру сотр	by computer model	0		
CT-51B Hot Water Boiler	-	Weil - Mclain model 786 forced draft firebox	heating water	12.15 GPH 0.82 KVA-475V	by comp	by computer model		18,771	
B-51 Hot Water Boiler	-	1104 MBH out Weil - Mclain model 786 forced draft firebox	heating water	12.15 GPH 0.82 KVA-475V	by comp	by computer model	_	0	
B-52		1104 MBH out B & G WU-125-43, 80 gpm lube- 150 F in, 180 F out, bldg.	heating water	0 GPH	ру сотр	by computer model		0	— т
HX-54		shell- 220 F in, 190 F out, boiler	B-51, B-52	50.0 A		-			
Air Compressor	~	Sullair model 12B - 60 125 psig max.	Test Cell 1 & 2	475.0 V - 3 ph. 41.1 KVA	4	7 52	59,842	42	
AC - 1		2nd on line		61.0 A			146 182	182	
Air Compressor		Sullair Model 125 - 55 125 psig max.	Test Cell 1 & 2	475.0 V - 3 ph. 50.2 KVA	∞	76	-+-		
AC - 2		Ingersol Rand		N/A A N/A V-3 ph	0	- -	o 		
Air Compressor		240 scfm 150 HP	Test Cell 1 & 2 Stand-by .	N/A KVA					$\neg \top$
AC - 51 Air Compressor	-	Ingersol Rand 240 scfm	Test Cell 1 & 2	N/A A N/A V - 3 ph. N/A KVA	0	0	0		
AC - 52		150 HP	Statio-by	7.5 A				7 <i>6</i> 0 6	
Air Dryer		Floneer model ring 500 scfm	AC-1 & AC-2	475.0 V - 3 ph. 6.2 KVA	4	,	_		\top
Air Dryer	-	Tub psig Pall model 400DHA4-4000BS	AC-51 & AC-52	N/A A N/A V - 3 ph. N/A KVA	0	0	0	0	
Hot Water Unit Heater	-	Horizontal 1000 cfm	Test Cell # 2	N/A HP	0	0	0	0 0	
UH - 54									

Facility, Test Cell #2	January Z, 1930 FULL OPERATION TIMES ANNUAL U	HRS DAYS WKS	fm Test Cell # 2 1.6 KW 24 7 26 6,989	mith model DSE-20-6 Test Cell # 2 6 KW 2 7 52 4,368 Ion restrooms		0 18,771	516,756		4,368	686'9	770 844		215,051	
HVAC EQUIPMENT LIS		DESCRIPTION	4000 cfm	A.O. Smith model DSE-20-6 15 gallon										
		QTY.	-	1-51		9	<u> </u>	5	,	· ·		 S	G	
		ITEM	Evap. Cooler	EC-51 Water Heater WH-51	Electric	TOTAL HEATING		IOIAL COULING	TOTAL DHW	TOTAL FANS		TOTAL PUMPS	TOTAL MISC.	

			MOTOR	LIST FO	R: HELSTF ED: Octob	MOTOR LIST FOR: HELSTF - TEST CELL #2 DATE SURVEYED: October 10 - 13, 1995	.L #2 995			i i		%	KW	KVA
			ABEA SERVED	유	PHASE		NAMEPLATE	YATE		ACTOR	JAL AMOO	2 0	DEMAND	
ITEM	αTY	DESCRIPTION	AKEA SERVED			VOLTS	AMPS	占	ᇤ	VOLTS	AMPO	3		
CT-51A	-	Cooling Tower	CH-51 & CH-52	7.5	3	460	11.0	0.830	76.9%	460	8.0	72.7%	5.3	6.4
CT-518	-	Cooling Tower	CH-51 & CH-52	7.5	8	460	11.0	0.830	76.9%	460	8.0	72.7%	5.3	6.4
		Chilled Water Pump	CH-51	40	6	460	50.0	0.830	90.2%	475	40.0	80.0%	27.3	32.9
ō		Chilled Water Pump	CH-52	04	က	460	50.0	0.830	90.2%	475	42.0	84.0%	28.7	34.6
P-52	- \	Condenser Water Pump	CH-51	15	п	460	21.0	0.764	87.5%	475	21.0	100.0%	13.2	17.3
09-4		Condenser Water Pump	CH-52	5	е	460	18.5	0.850	92.4%	475	15.0	81.1%	10.5	12.3
F9-d	- ,	October Dimo	B-51	7.5	ь	460	10.0	0.821	85.5%	475	9.5	95.0%	6.4	7.8
p-63	-				,	460	10.3	0.797	85.5%	475	11.0	106.8%	7.2	0.6
P-64	-	Heating Water Pump	B-52		,	}								
P-65	-	Condenser Water Pump	CT-51A/B	8	e e	460	38.6	0.822	88.5%	460	34.0	88.1%	22.3	27.1
	-	Condenser Water Pump	CT-51A/B	8	6	460	38.6	0.822	88.5%	460	34.0	88.1%	22.3	27.1
86	-			, "	-	460	9.4	0.835	73.1%	475	4.0	87.0%	2.7	3.3
P-70	-	Heating Water Pump	r-a	,	,									,
P-71	-	Heating Water Pump	B-52		ო 	460	4.6	0.835	73.1%	475	4.0	87.0%	2.7	5.6
	_							0.821					153.9	187.5
TOTAL														

$\begin{array}{c} \text{APPENDIX } \tilde{G} \\ \text{COMPUTER MODELING OF BUILDING SYSTEMS} \end{array}$

TABLE OF CONTENTS

		G-1
A.	General Parameters People, Lights and Miscellaneous Equipment Schedules	G-2
B.	People, Lights and Miscellaneous Equipment Schedules	G-3
C.	HVAC Equipment Schedules	G-3
D.	Building HVAC Systems	G-4
E.	Boiler & Chiller Systems.	G-7
Trace	600 Input Data - LSTC Building, Existing Conditions	G-19
Trace	600 Input Data - LSTC Building, Existing Conditions 600 Input Data - LSTC Building, ECO-A 600 Input Data - LSTC Building, ECO-B	G-30
Trace	600 Input Data - LSTC Building, ECO-B	G-4 1
Trace	600 Input Data - LSTC Building, ECO-C	G-53
Trace	e 600 Input Data - LSTC Building, ECO-D	G-64
Trace	e 600 Input Data - LSTC Building, ECO-E	G- 66
Trace	e 600 Input Data - LSTC Building, ECO-F	G-71
Trace	e 600 Output Data - LSTC Building, Existing Conditions	G-78
Trac	e 600 Output Data - LSTC Building, ECO-A	G-84
Trac	e 600 Output Data - LSTC Building, ECO-B	G-90
Trac	ce 600 Output Data - LSTC Building, ECO-C	G-96
Trac	ce 600 Output Data - LSTC Building, ECO-D	G-103
Trac	ce 600 Output Data - LSTC Building, ECO-E	G-109
Tra	ce 600 Output Data - LSTC Building, ECO-T	G-115
Tra	ce 600 Input Data - TC-1 and TC-2 Buildings, Existing Contains	G-123
Tra	ice 600 Input Data - TC-1 and TC-2 Buildings, ECO-1	G-131
Tra	ace 600 Input Data - TC-1 and TC-2 Buildings, ECO 5	G-138
Tra	ace 600 Input Data - TC-1 and TC-2 Buildings, ECO-C	G-147
Tra	ace 600 Input Data - TC-1 and TC-2 Buildings, ECO 2	G-155
Tr	ace 600 Input Data - TC-1 and TC-2 Buildings, ECO-U	G-157
Tr	ace 600 Input Data - TC-1 and 1C-2 Buildings, ECO 17	G-160
Tr	race 600 Output Data -TC-1 and TC-2 Buildings, Existing Condition	G-166
Tı	race 600 Output Data -TC-1 and TC-2 Buildings, ECO-T	G-171
Tı	race 600 Output Data -TC-1 and TC-2 Buildings, ECO-B	G-176
T	race 600 Output Data -TC-1 and TC-2 Buildings, ECO-C	G-181
Т	race 600 Output Data -TC-1 and TC-2 Buildings, ECO-E	G-186
Т	Frace 600 Output Data -TC-1 and TC-2 Buildings, ECO-E	G-191
Τ	Frace 600 Output Data -TC-1 and TC-2 Buildings, ECO-G	G-196
7	Frace 600 Output Data -TC-1 and TC-2 Buildings, ECO-H Frace 600 Utility Schedules - LSTC Building,	G-234
7	Frace 600 Utility Schedules - LSTC Building,	

APPENDIX Ğ COMPUTER MODELING OF BUILDING SYSTEMS

- A. General Parameters. The following assumptions and estimates were used in the modeling of the existing building systems included in this study.
 - 1. The Trace 600 weather data for Holloman AFB, New Mexico was used in all of the computer simulations.
 - 2. The Trace 600 computer simulations were performed for the months of January through December to determine annual lighting and HVAC equipment energy consumptions.
 - 3. The Trace 600 default calender and holiday schedules were used for this model. The holiday schedule includes the seven standard holidays: New Years Day, President's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving, and Christmas.
 - 4. All building dimensions and construction data were determined from as-built drawings when available, or from field measurements taken during the site visit.
 - 5. Design room temperatures (thermostat setpoints) were obtained from CEMP-E (9 December 1991) Chapter 13, Section 3. These temperatures were 75°F for cooling in comfort conditions, 70°F, 45% or 50% relative humidity for cooling in areas housing computer type equipment, and 70°F for heating.
 - 6. The number of people in each building or room was estimated from field notes taken during the site visit. The sensible and latent heat gain rates used for the people in each room were taken from ASHRAE data.
 - 7. Building and room lighting loads were obtained from as-built drawings when available, or from field notes taken during the site visit.
 - 8. Building and room miscellaneous equipment loads were estimated from field notes taken during the site visit. These loads represent the internal heat gains generated from equipment in the rooms, such as computers, office equipment, test equipment, etc. Heat gain data for the various types of internal loads was taken from ASHRAE or estimated from the power supplied by the Uninterruptible Power Source (UPS) feeders, which was measured during the site visit.
 - 9. It was assumed that ½ of the equipment being served by the UPS feeders was operating at the time that the amperes and voltage were measured on the system, and this was assumed typical for all times other than testing periods.
 - 10. For all building areas with forced ventilation, the rates were taken from schedule data on the existing air handlers. Data from ASHRAE Standard 62-1989 was used to verify ventilation requirements and implemented, where applicable, in the analysis for proposed ECO's.
 - 11. Building and room exhaust rates were taken from as-built drawings.
 - 12. Lighting operational times were estimated from field notes taken during the site visit.
 - 13. The exterior walls and portions of the roof which are below grade in the LSTC building were modeled as partitions with a constant adjacent space temperature. These soil temperatures were

- obtained from The International Ground Source Heat Pump Association (IGSHPA) for the areas surrounding Roswell, N.M.
- The U-value for the exterior walls, roof, and domes of the LSTC building was estimated at 0.18 BTUH/sqft/°F for a masonry wall of 24" concrete.
- The ballast factor for all fluorescent fixtures was included in the power supplied to each fixture rather than a separate input into TRACE 600.
- No cooling or heating temperature setback controls were included in the simulations for the existing conditions, as none are currently in place.
- B. People, Lights and Miscellaneous Equipment Schedules. The following assumptions and estimates were used in the modeling of the existing LSTC and TC-1 buildings included in this study.
 - 1. In modeling the existing building operation, all people were scheduled at 100% from 7 am until 12 pm, and from 1 pm until 4 pm during the weekdays. During the lunch hour, from 12 pm until 1 pm, all people were scheduled at 10%. On the weekends and holidays, all people were scheduled at 0%.
 - 2. In modeling the proposed variable air volume system for the LSTC building (ECO-D), the number of people in a particular zone at any one time varied to more accurately account for the change in load that actually occurs during the period of a day. Three separate schedules, all with the same amount of total occupied hours for the people, were used to simulate people entering and leaving the zone during the day. For example, all people for a particular zone were scheduled at 100% from 7am to 9 am, 10 am to 12 pm, 1 pm to 2 pm, and 3 pm to 4 pm. At other times, besides the lunch hour, during the hours of 7 am to 4 pm, the people were scheduled at 50 %. During the lunch hour, all people were scheduled at 10%. All other times the people were scheduled at 0%.
 - Several schedules were used to simulate the existing and proposed operation of the interior lighting in the buildings. In all cases, the lights were scheduled at 100% from 7am until 4 pm. The schedules then differed according to the unoccupied building hours between 4 pm to 7am. Typically, the lights were scheduled at 100%, 75%, 50%, 40%, 25%, 10%, or 0% for the unoccupied times, according to existing or proposed conditions.
 - 4. All miscellaneous equipment that is used for normal day to day operation (personal computers, copiers, fax machines, etc.) was scheduled at 100% from 7 am until 4 pm. On the weekends and holidays, all equipment was scheduled at 0%.
 - All electronic equipment used for laser systems testing in the LSTC and TC-1 buildings are powered through UPS systems. The main electrical feeders to these two UPS systems were measured to determine the power consumption of this electronic equipment. It was assumed that approximately 50% of the total equipment was on during the power measurements, and that this is the equipment left on year round. The other 50% of the electronic equipment was assumed to be turned on only during the infrequent testing. The computer simulations approximated these conditions.

- C. HVAC Equipment Schedules. The following assumptions and estimates were used in the modeling of the existing buildings included in this study.
 - 1. All air handler fans, cooling coils, and heating coils were scheduled to operate 100% of the day, 12 months of the year, as required by room thermostats to maintain building setpoint temperatures.
 - All building infiltration and ventilation air is scheduled to be introduced into the buildings at a fixed rate 100% of the day, 12 months per year.
 - 3. All building and room thermostats were scheduled to maintain the design setpoints 24 hours per day, 12 months per year with no setback periods.
- D. Building HVAC Systems. The following assumptions and estimates were used in the modeling of the existing building HVAC systems included in this study.
 - HVAC air system types were taken from building as-built drawings when available, or from field notes taken during the site visit.
 - 2. Buildings were zoned as shown on as-built drawings and served by individual HVAC air systems in order to generate a more realistic load profile for the boilers and chillers.
 - 3. The controls for all of the primary and secondary equipment was modeled as indicated on the as-built control drawings for each piece of equipment, and from recorded measurements obtained from base personnel.
 - 4. In order to simplify the model, similarly loaded rooms that were served by the same AHU were combined and modeled as one room.
 - 5. With the exception of ESH-53, the original building humidification equipment was not modeled because it has all been disconnected.
 - 6. Some areas were served by both computer room units and central air systems. In order to simplify the model, the computer room units were modeled to handle the computer room equipment load while the other AHU serving the space conditioned the remainder of the loads.
 - 7. Forward curved fans were used in modeling all of the air handling units.
 - 8. ECO-C (Install EMS Systems) involved the repair or retrofit of the existing controls for the air systems. To simplify the analysis, there were four control strategies that were proposed in the model. The following are a list of the proposed air system control strategies:

<u>Cold deck reset:</u> the CHW coil is modulated to maintain minimum reheat or cooling coil bypass according to the fluctuation of space (zone) temperatures.

Optimum Start/Stop (LSTC only): the air system fan is energized at a certain time before occupancy which is calculated by multiplying the number of minutes required to change the space temperature one degree by the number of degrees away from the space temperature setpoint.

Outside Air Economizer: When the ambient temperature falls below 65°F, the OA, return, and

exhaust dampers are modulated between a maximum OA intake and the minimum required for IAQ standards to maintain a mixed air temperature setpoint.

Outside Air scheduling (TC-1 only): At periods of 0% occupancy, OA supply will be 0%.

- E. Boiler & Chiller Systems. The following assumptions and estimates were used in the modeling of the boiler and chiller systems included in this study.
 - 1. Boiler and chiller systems types, full load capacity, and energy consumption were identified during the field inspection and used in the computer simulations for modeling the existing equipment. The Trace 600 models were used for part load performance of these boilers and chillers.
 - 2. The chillers serving the LSTC building were modeled with a double bundle heat recovery condenser section that supplies heating water at 95°F to reheat coils.
 - 3. It was assumed that all existing chillers had a full load KW/ton increase of 1% over their original rating for each year of service up to ten years. For all service over ten years, 0.25% per year was added to the full load KW/ton rating. This was done to account for natural efficiency losses due to tube fouling and compressor wear.
 - 4. It was assumed that all existing boilers had a full load efficiency decrease of 1% under their original rating for each year of service up to ten years. For all service over ten years, 0.25% per year was deducted from the full load efficiency rating. This was done to account for natural efficiency losses due to tube fouling and burner wear.
 - 5. New pumps were selected for all proposed boilers and chillers when required and input to simulate the new systems.
 - 6. Existing cooling tower types and their fan horsepowers were identified during the field inspection and used in the existing and proposed computer simulations.
 - 7. In all areas, a base load was estimated and added to the existing and proposed chillers and boilers to account for heat loss or gain from piping insulation and pumps. This base load increased the required capacity of the boilers and chillers and shows up as 'base utility' in the equipment energy consumption output sheets.
 - 8. The age of the equipment, if not available from as-built drawings, was estimated from field notes taken during the site visit.
 - 9. The evaporative coolers serving the unconditioned areas in Test Cell #1 were not modeled because the only energy consumed by these units is the fractional HP pump and fan.
 - 10. New boiler and chiller alternatives were selected for the ECO evaluations. Full load capacity and energy consumption rates were obtained from manufacturer's data and input into the computer simulations. Part load energy consumption data was modeled using Trace 600 part load curves for similar equipment.
 - All proposed chillers were selected from the top 25% of their class in terms of efficiency (KW/ton), and also were at least 10% more efficient than current design standards.
 - 12. For ECO-C (Install EMS Systems), the boiler and chiller equipment was modeled with new

control strategies as applicable. The following are a list of the water system control strategies used in the computer models:

<u>Chiller Sequencing</u>: In areas where more than one chiller was selected to handle the cooling load, chiller sequencing was modeled to obtain the optimum efficiency at all part load conditions. This also required selecting the chillers to operate at the best efficiency points for the greatest percentage of operation time.

<u>CHW/HW Temperature Reset:</u> The chilled/heating water supply temperature was reset according to the part load ratio of the chiller/boiler. At 80% part load, the chilled/heating water supply temperature was reset to 2°F above/below design temperature. At 40% part load, the chilled/heating water temperature was reset to a maximum value of 4°F above/below design temperature.

<u>CND Water Reset (TC-1only)</u>: Whenever possible, the condenser water supply temperature is reset to a temperature below 85°F to decease the amount of work that the compressor is required to accomplish.

13. The chillers and boilers in TC-2 serve other equipment besides TC-1. These other loads, including piping and pumping heat input and loses, were estimated from field notes or as-built drawings and input as a base load on the chillers and boilers.

This Page Reserved For Future Use

01 1 - Job Information

Project: EEAP ENERGY STUDY - HELSTF

Location: WHITE SANDS - ALAMOGORDO, NEW MEXICO

Client: FORT WORTH CORPS OF ENGINEERS
Program User: HUITT-ZOLLARS, INC.

Comments: LSTC BUILDING

EXISTING LSTC BUILDING

Weather Code HOLLOMAN	Number	Winter Clearness Number			Winter Design Dry Bulb	Building Orientation	Summer Ground Reflect	Winter Ground Reflect
		· Load Sec	ction Alte	ernative #1	١			

Card 19- Load Alternative Number Description
1 EXISTING BUILDING

Card 20				Gener	al Room	Paramete	rs				
Cura Lo	Zone						Acoustic	Floor to	Duplicate	Duplicate	
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number	Number	Descrip	Length	Width	Туре	Height	Resistance	Height	Multiplier	Zone	
5	1	8-17 B,C,& D	25.5	59.5	10	2		10			
10	2	B-17,18,AEROBICS	59	59.5	10	2		10			
15	3	B-8,16,27-32	80.5	80.5	10	2		10			
20	4	B-25,25A	22	15	10	2		10			
25	5	B-4	27	27.5	10	2		10			
30	6	B-12,12A	55.5	55.5	10	2		10			
35	7	B-2,13,19,20-22	45.5	45.5	10	2		10			
40	8	B-1,3,24	81	81	10	2		10			
45	9	B-9,10,11,11A	111.5	20	10	2		10			
50	10	DOMES, MAIN WINGS	40	40.5	10	2		10			
55	11 .	SW LOWER DOME	48	48	10	2		10			
60	12	NE LOWER DOME	48	48	10	2		10		-	•
65	13	MAIN FLR WEST	89.5	37	10	2		10		٠.	
70	14	MAIN FLR EAST	61	61	10	2		10			•
75	15	112,119A,123A,	94.5	95	10	2		10			
80	16	MAIN FLOOR CENTR	93	93.5	10	2		10			
85	17	MAIN FLOOR SOUTH	51	51	10	2		10			

ard 20				dellel	at Room	Paramete	Acoustic	Floor to	Duplicate	Duplicate	Perimete
Room Number 90 95	Zone Reference Number 18 19	Room Descrip L.DOME COMP. RMS. L.DOME OFFICES	Floor Length 63.5 71	Floor Width 63.5 71	Const Type 10 10	Plenum Height 2 2		Floor	Floors Multiplier	Rooms per Zone	Depth
100	20	U.DOME	88.5	88.5	10	2		10			
105	21	RM 119, AH-8	1	1	•		4				
110	22	RM 119A, AH-9	1	1							
115	23	RM 123, AH-10	1	1							
120	24	RM 127A, AH-11A	1	1							
125	25	RM 127A, AH-11B	1	1							
130	26	RM 127, AH-12	1	1							
135	27	AUX CNTRL, AH-14	1	1		_		10			
140	28	RM 110 UNDERFLOR	33	. 34	10	2		10			
145	29	RM 120A,122,126A	50	50	10	2					
150	30	RM 146A,148,148A	32	32	10	2		10 10			
155	31	204,205,206,207	63.5	63.5	10	2		10			

				Therm	ostat Param	eters				
Card 21		Room	Cooling	Cooling	Heating	Heating	Heating	T'stat		Carpet
	Cooling	Design	T'stat	T'stat	Room	T'stat	T'stat	Location		
Room	Room	RH	Driftpoint			Driftpoint	Schedule	Flag	Average	
Number	Design DB 75	50	75	•••••	70	70			HEAVY130	
5 10	75 75	50	75		70	70			HEAVY130	
15	75 75	50	75		70	70			HEAVY130	
20	75 75	50	75		70	70			HEAVY130	
25	75 75	50	75		70	70			HEAVY130	
30	75 75	50	75		70	70			HEAVY130	
35	75 75	50	75		70	70			HEAVY130	
40	75 75	50	75		70	70			HEAVY130	
45	70	45	70		70	70			HEAVY130	
50	75	50	75		70	70			HEAVY130	
55	75	50	75		70	70			HEAVY130	
60	75	50	75		70	70			HEAVY130	
65	75	50	75		70	70			HEAVY130	
70	75	50	75		70	70			HEAVY13	
75	75	50	75		70	70			HEAVY13	
80	70	45	70		70	70			HEAVY13	
85	75	50	75		70	70			HEAVY13	
90	70	45	70		70	70			HEAVY13	
95	75	50	75		70 ´	70	•		HEAVY13	
100	75	50	7 5		70	70			HEAVY13	טא טו
105	70	45	70		70	7 0				
110	70	45	70		70	70				
115	70	45	70		70	70				
120	70	45	70		70	70				
125	70	45	70		70 .	70				
130	70	45	70		70	70				

	Cooling	Room	Cooling	Cooling		neters Heating	Heating		Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	_	Location	•	•
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint			Average	
135	70	45	70		70	70				1 1001
140	70	45	70		70	70				
145	70	45	70		70	70				
150	70	45	70		70	70 .				
155	70	45	70		70	70				

Card 22	!			Roof Par	ameters				
		Roof							
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof	Roof	Roof
Number	Number	Floor?	Length	Width			Direction		
50	1 .	YES			0.18	19			.4
100	1	NO	88	88	0.18	19			.4

Card 24				Wall P	arameters				
			•		Wall				Ground
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance
Number	Number	Length	Height	U-Value	Type	Direction	Tilt		
50	1	26.5	31	0.18	94	0		.4	
50	2	26.5	31	0.18	94	90		.4	
50	3	26.5	31	0.18	94	180		.4	
50	4	26.5	31	0.18	94	270		.4	
55	1	42	15	0.18	94	0		.4	
55	2	42	15	0.18	94	90		.4	
55	3	42	15	0.18	94	180		.4	
55	4	42	15	0.18	94	270		.4	
60	1	42	15	0.18	94	0		.4	
60	2	42	15	0.18	94	90		.4	
60	3	42	15	0.18	94	180		.4	
60	4	42	15	0.18	94	270		.4	
90	1	37.5	10	0.18	94	0		.4	
90	2	37.5	10	0.18	94	90		.4	
90	3	37.5	10	0.18	94	180		.4	
90	4	37.5	10	0.18	94	270		.4	
95	1 .	47	10	0.18	94	0	~	.4	
95	2	47.5	10	0.18	94	90		-4	
95	3	47	10	0.18	94	180	•	.4	
95	4	47.5	10	0.18	94	270		.4	
100	1	78	29	0.18	94	0		.4	
100	2	78.5	29	0.18	94	90		.4	
100	3	78	29	0.18	94	180		.4	
100	4	78.5	29	0.18	94	270		.4	
						-· -			

Card 26				s	chedules -					
Room					Reheat	Cooling	Heating	Auxiliary		Daylighting
Number	People	Lights	Ventilation	Infiltration	Minimum	Fans	Fan	Fan	Exhaust	Controls
5	OFFICEP1	OFICEL25				,				
10	OFFICEP1	OFICEL26								
15	OFFICEP1	CLGONLY								
20		CLGONLY								
25		CLGONLY				•	:			
30	OFFICEP1	CLGONLY								
35	OFFICEP1	CLGONLY								
40		CLGONLY								
45	OFFICEP1	CLGONLY								
50	OFFICEP1	CLGONLY								
55	OFFICEP1	CLGONLY								
60	OFFICEP1	CLGONLY								
65	OFFICEP1	OFICEL27								
70	OFFICEP1	OFFICEL6								
75	OFFICEP1									
80	OFFICEP1						*			
85	OFFICEP1									
90	OFFICEP1									
95	OFFICEP1									
100	OFFICEP1	CLGONLY								
105	CLGONLY									
110	CLGONLY									
115	CLGONLY									
120	CLGONLY									
125	CLGONLY									
130	CLGONLY									
135	CLGONLY									
140	CLGONLY									

Card 27					, 00,	e and Ligh	Lighting		Percent	Daylig	hting
Room	People	People	People	People	Lighting	Lighting	Fixture	Ballast	-	Reference	Reference
Number	Value	Units	Sensible	Latent	Value	Units	Туре	Factor	Ret. Air	Point 1	Point 2
5 .	7	PEOPLE	250	200	2880	WATTS	ASHRAE1				
10	3	PEOPLE	250	200	5311	WATTS	SUSFLUOR				
15	2	PEOPLE	250	200	11728	WATTS	SUSFLUOR				
20		-			576	WATTS	SUSFLUOR				
25					3193	WATTS	SUSFLUOR				
30	2	PEOPLE	250	200	4128	WATTS	ASHRAE1	•			
35					1728	WATTS	ASHRAE1				
40					5664	WATTS	ASHRAE1				
45	3	PEOPLE	250	200	8064	WATTS	ASHRAE1				
50	1	PEOPLE	250	200	576	WATTS	ASHRAE1				
55	1	PEOPLE	250	200	4416	WATTS	ASHRAE1				
60	3	PEOPLE	250	200	4983	WATTS	ASHRAE1				
65	7	PEOPLE	250	200	9175	WATTS	SUSFLUOR				
70	13	PEOPLE	250	200	5568	WATTS	ASHRAE1				
75	15	PEOPLE	250	200	22272	WATTS	ASHRAE1				

Card 27	'				Peopl	e and Ligh	ts Lighting		Percent	Daylig	
Room Number 80 85 90 95 100 105 110 115	People Value 12 11 16 18 19 1	People Units PEOPLE PEOPLE PEOPLE PEOPLE PEOPLE PEOPLE PEOPLE PEOPLE	People Sensible 250 250 250 250 250 250 250 250 250		Lighting Value 19104 7008 8310 10284 16416	Lighting Units WATTS WATTS WATTS WATTS WATTS		Ballast Factor		Daylig Reference. Point 1	
125 130	1 1	PEOPLE PEOPLE	250 250	200							
135	4	PEOPLE	250	200							
140	.1	PEOPLE	250	200							

Card 28	}			Mis	cel l'aneous	Equipment					
Caro Ec	, Misc		Energy	Energy		Energy	Percent	Percent	Percent		
Room	Equipment	Equipment	Consump	Consump	Schedule	Meter	of Load		Misc. Sens	Radiant	•
Number	- 1 1	Descrip	Value	Units	Code	Code	Sensible	to Room	to Ret. Air	Fraction	Air Patn
5	1	TYP. OFFICE EQ.	8500	WATTS	OFFICEL1						
10	1	TYP. OFFICE EQ.	1430	WATTS	OFFICEL1						
15	1	TYP. OFFICE EQ.	13814	WATTS	CLGONLY						
20	1	ELEV. MOTOR	6230	WATTS	CLGONLY						
30	1	OFFICE, LIGHT EQ	4636	WATTS	OFFICEL1						
40	1	MISC. EQ.	13132	WATTS	CLGONLY						
45	1	TYP OFFICE EQ	4250	WATTS	OFFICEL1						
55	1	TYP OFFICE EQ	830	WATTS	OFFICEL1						
60	1	TYP OFFICE EQ	7140	WATTS	OFFICEL1						
65	1	TYP OFFICE EQ	9040	WATTS	OFFICEL1						
70	1	TYP OFFICE EQ	12445	WATTS	OFFICEL1						
85	1	TYP OFFICE EQ	9220	WATTS	OFFICEL1						
90	1	TYP OFFICE EQ	4980	WATTS	CLGONLY						
95	1	TYP OFFICE EQ	23580	WATTS	OFFICEL1						
100	1	MISC. OFFICE EQ	32541	WATTS	OFFICEL2						
105	1	COMPUTERS - UPS	5995	WATTS	OFFICEM1						
110	1	COMPUTERS - UPS	7194	WATTS	OFFICEM1				-		
115	. 1	COMPUTERS - UPS	4700	WATTS	OFFICEM1				•		
120	1	COMPUTERS - UPS	3561	WATTS	OFFICEM)					•	
125	1	COMPUTERS - UPS	3561	WATTS							
130	1	COMPUTERS - UPS	7320	WATTS	OFFICEM1						
135	1	COMPUTERS - UPS	2214	WATTS	OFFICEM'						
140	1	COMPUTERS - UPS	4892	WATTS	OFFICEM'						
145	1	COMPUTERS - UPS	10978	WATTS	OFFICEM						
150	1	COMPUTERS - UPS	4434	WATTS	OFFICEM						
155	1	COMPLITERS - UPS	17545	WATTS	OFFICEM	1 ELEC					

		Venti	lation			Infil				
Room		ling		ing		ling	Hea	ting		
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Unit
5	163	CFM	163	CFM						
10	163	CFM	163	CFM						
15	164	CFM	164	CFM						
20	251	CFM	251	CFM		•	:			
25	251	CFM	251	CFM						
30	251	CFM	251	CFM						
35	251	CFM	251	CFM						
40	251	CFM	251	CFM						
45	800	CFM	800	CFM						
50	393	CFM	393	CFM						
55	393	CFM	393	CFM						
60	393	CFM	393	CFM	•					
65	393	CFM	393	CFM						
70	394	CFM	394	CFM						
75	394	CFM	394	CFM			:			
80	375	CFM	375	CFM						
85	375	CFM	375	CFM						
90	375	CFM	375	CFM						
95	375	CFM	375	CFM						
100	1000	CFM	1000	CFM						
135	300	CFM	300	CFM						

		Ma	in			Auxi	liary			
Room	Cool	ing	Heat	ing	Coo	ling	Hea	ting	Room E	
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
5	2675	CFM	2675	CFM						
10	3180	CFM	3180	CFM						
15	10917	CFM	10917	CFM					790	CFM
20	700	CFM	700	CFM						
25	800	CFM	800	CFM						
30	3025	CFM	3025	CFM						
35	845	CFM	845	CFM						
40	17300	CFM	17300	CFM						
45	9060	CFM	9060	CFM						•
50	1100	CFM	1100	CFM						
55	1570	CFM	1570	CFM						
60	1910	CFM	1910	CFM		.• `				
65	2905	CFM	2905	CFM						
70	3075	CFM	3075	CFM						
75	6840	CFM	6840	CFM						
80	5952	CFM	5952	CFM					3769	CFM
85	2339	CFM	2339	CFM						
90	4268	CFM	4268	CFM		•				
95	3824	CFM	3824	CFM						
100	12518	CFM	12518	CFM						

		Ma	in			Aux i	liary			
Room	Coo	ling	Hea	ting	Coo	ing	Hea	ting	Room E	xhaust
Number	Value	Units		Units			Value	-		Units
105	8643	CFM	8643	CFM						
110	11962	CFM	11962	CFM						
115	4780	CFM	4780	CFM						
120	7526	CFM	7526	CFM						
125	7467	CFM	7467	CFM		•	•			
130	8800	CFM	8800	CFM						
135	11513	CFM	11513	CFM						
140	5409	CFM	5409	CFM						
145	10620	CFM	10620	CFM						
150	8893	CFM	8893	CFM						
155	23005	CFM	23005	CFM						

Card 31			Part	ition Param	neters -				
Room	Partition	Partition	Partition	Partition	Const	Тетр	Cooling		Adjacent
Number	Number	Length	Height	U-Value	Type	Flag	Temp	Temp	Room No
5	1	43	43	.18	110	CONSTANT	63	63	
10	1	68.5	68.5	.18	110	CONSTANT	63	63	
15	1	92.5	93	.18	110	CONSTANT	63	63	
20	1	26.5	26.5	0.18	110	CONSTANT	63	63	
25	1	27.5	27	0.18	110	CONSTANT	63	63	
30	1	55.5	55.5	0.18	110	CONSTANT	63	63	
35	1	64	10	0.18	110	CONSTANT	63	63	
40	1	50	10	0.18	110	CONSTANT	63	63	
45	1	111.5	10	0.18	110	CONSTANT	63	63	
60	1	45	45	0.18	110	CONSTANT	63	63	
65	1	89.5	37	0.18	110	CONSTANT	71	55	
70	1	89.5	37	0.18	110	CONSTANT	71	55	
75	1	87	87	0.18	110	CONSTANT	71	55	
85	1	60	60	0.18	110	CONSTANT	71	55	

------ System Section Alternative #1 ------

```
Card 39- System Alternative
Number Description
```

1 EXISTING SECONDARY EQUIPMENT AND SYSTEMS

Card 40			Syste	m Type			
			OPTION	AL VENTIL	ATION SYST	EM	
System		Ventil			•		Fan
Set	System	Deck	Cooling	Heating	Cooling	Heating	Static
Number 1	Type BPMZ	Location ROADK	SADBVh	SADBVh	Schedule	Schedule	Pressure

Card 40			Syste	m Type			
					ATION SYST	EM	
System		Ventil					Fan
Set	System	Deck	Cooling	Heating	Cooling	Heating	Static
Number	Type	Location	SADBVh	SADBVh	Schedule	Schedule	Pressure
2	BPMZ						
3	TRH						
4	TRH						:
5	TRH	ROADK					.389
6	BPMZ						
7	COMP						
8	COMP						
9	COMP						
10	COMP						
11	COMP						
12	COMP				•		
13	COMP						
14	TRH						

Card 41				·	Zone A	ssignmer	nt					
System						-						
Set	Ref	#1	Ref	#2	Ref	#3	Ref	#4	Ref	#5	Ref	#6
Number	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End
1	1	3					•					
2	4	8										
3	9	9										
4	10	15										
5	16	19										
6	20	20										
7	21	21										
8	22	22										
9	23	23										
10	24	24									*	
11	25	25										
12	26	26										
13	27	27										
14	28	31										

Card 42	!			Fan	SP ar	nd Duct P	arameters	,			
System Set	Cool Fan	Heat Fan	Return Fan	Mn Exh Fan	Aux Fan	Rm Exh Fan	Cool Fan Mtr Loc	Return Fan Mtr	Supply Duct	Supply Duct	Return Air
1 2	1.75				0,	1.0	Loc	Loc	ne un	LOC	Path
3				.326 .208							

Card 42	!			Far	SP ar	nd Duct P	arameters	;			
System	Cool	Heat		Mn Exh			Cool	Return	Supply		Return
Set	Fan	Fan	Fan	Fan	Fan	Fan	Fan Mtr	Fan Mtr	Duct	Duct	Air
Number	SP	SP	SP	SP	SP	SP	Loc	Loc	Ht Gn	Loc	Path
4	2.5			.613							. =
5	3.45					1.5					
6	2.1			.26							
7	0.92										
8	1.67							•			,
9	0.64										
10	1.39										
11	1.54										
12	1.04										
13	1.64			.077							
14	3.25										

Card 43 System Set Number 1 2 3 4 5 6	Minimum Cooling	Maximum	Minimum	Maximum	Minimum	Maximum Cooling	Minimum	Maximum	Minimum	Design Ht Rec Diff
--	--------------------	---------	---------	---------	---------	--------------------	---------	---------	---------	--------------------------

System Set	Main Cooling		Direct Evap		Auxiliary		Main Preheat	Reheat	Mech.	Auxiliary Heating
Number	Coil	Economizer	Coil	Coil	Coil	Coil	Coil	Coil	Humidity	Coil
1						OFF	OFF	OFF		
2						OFF	OFF	OFF		
6						OFF	OFF	OFF		

Card	47						Fan Overr	ides				⊁ .
Sys	Clg	Htg	Ret	Mn Exh	Aux	Rm Exh	Opt Vnt			MAIN CO	OLING FAN-	
									Air	Air	Size	
Num 3	Eff	Eff	Eff	Eff	Eff	Eff	Eff	Eff	Value	Units	Meth	Confg
3 4												BLOW
5												BLOW
_												BLOW
14								•				BLOW

----- Equipment Section Alternative #1 -----Card 59----- Equipment Description / TOD Schedules -----Elec Consump Elec Demand Demand ---- Demand Limit ---Alternative Time of Day Time of Day Limit Temperature Number Schedule Schedule Max KW Alternative Description Schedule Drift 1 EXISTING PRIMARY EQUIPMENT Card 60------Cooling Load Assignment------Load All Coil Cooling Asgn Loads To Equipment -Group 1- -Group 2- -Group 3- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-Ref Cool Ref Sizing Begin End PKPLANT Card 62----- Cooling Equipment Parameters Cool Equip Num ------COOLING-------Ref Code Of --Capacity-- ----Energy------Capacity-- ----Energy----Order Seq Limit Num Name Units Value Units Value Units Value Units Value Units Num Type Number 1 EQ1010S 1 154 TONS 142 KW 91 TONS 88 KW 1 2 EQ1010S 1 154 TONS 91 TONS 142 KW 88 KW 2 Card 63----- Cooling Pumps and References -----Cool ---CHILLED WATER---- ----CONDENSER----- ---HT REC or AUX---- Switch-Ref Full Load Full Load Full Load Full Load Full Load over Cold Cooling Misc. Units Value Units Value Units Control Storage Tower Access. 1 39.3 KW 27.5 KW 1 1 KW 18.3 KU 2 Card 64----- Cooling Equipment Options -----Cool Max Load Free Cond Cond Cond Rej Cond Rej Shed Evap Cooling Heat Entering Min Oper To Ref To Ref a HW Num Reset Economizer Precool Type Source Temp Temp -Type Number Temp 1 85 65 HEATING 1 95 2 65, 85 HEATING 2 95 Card 65------ Heating Load Assignment All Coil Assignment Loads To -Group 1- -Group 2- -Group 3- -Group 4- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-Reference Heating Ref Begin End 3 5 14 14 2 3 7 13

Card 67 Heat Ref Number 1	Equip Code Name EQ2002	Number Of Units	HW Pmp Full Ld Value O	Units KW	Cap'y	ting Equi	ipment Par Energy Rate Value 100	Units PCTEFF PCTEFF	Seq Order Number	Switch over Control	Hot Strg	Misc. Acc.	Cogen	Demand Limit Number
2	EQ2002 EQ2263	1	0	KW			100							

System Set Number	Cooling Fan	Heating Fan	Return Fan	Exhaust Fan	Auxiliary Supply	Room Exhaust	Optional Ventilation
1	EQ4003					EQ4003	EQ4003
2	EQ4003			EQ4003			
3	EQ4003			EQ4003			
4	EQ4003			EQ4003		/007	EQ4003
5	EQ4003					EQ4003	544003
6	EQ4003			EQ4003			
7	EQ4003						
8	EQ4003						
9	EQ4003						
10	EQ4003						
11	EQ4003						
12	EQ4003						
13	EQ4003			EQ4003			
14	EQ4003						

	1	MAIN S	YSTEM-		OT	IER SYS			LIMA		PRIORI Room	Opt
System Set Number 1	Cool Fan KW 6.5	Heat Fan KW	Ret Fan KW	Exh Fan KW .652	Aux Sup KW	Room Exh KW 1.2	Opt Vent KW .25	Cool Fan	Heat Fan	Aux Fan	Exh Fan	Ven Fan
2 3 4	10.2 6.5 17.3			.415 1.22								
5 6	13.9 7.4 3.3			.519)	2.7	.779 _.	-		•		
7 8 9	5.6 1.8	٠										
10 11	3.7 4.7											
12 13 14	3.3 5.6 22.			.15	6							

Card 71 Base Utility Number 1	Base Utility Descrip CHW PIP		Hourly Demand Value 4.64 77.4	Hourly		Energy Type CHILL-LD	Equip Refere Number	Dem nce Lim		ntering l	Leaving Temp	
Card 74 Tower Ref 1 2	Cooling Tower Code Ea5100 EQ5100		Capacity Units	Energy	/ Coolin Energy Consump Units KW		Tower Type CTOWER	Number Of Cells 1	Percent Airflow	Low Spd Energy Value	Energy	
	#1 Equip Code EQ5020	Energy Value 16.6	Energy S Units C KW	# ched E ode C	2 quip code	aneous Aco Energy Value	Energy Units	Sched Code	#3 Equip Code	Energ Value		Sched Code

Card 19- Load Alternative Number Description
2 ECO A - LIGHTING FIXTURE UPGRADE

				Genera	l Room	Paramete	rs				
Card 20	Zone						Acoustic	Floor to Floor	Duplicate Floors	Duplicate Rooms per	
Room	Reference	Room	Floor	Floor	Const		Ceiling	Height	Multiplier	•	•
Number	Number	Descrip	Length	Width	Type	Height	Resistance	-	Materpero.		
5	1	B-17 B,C,& D	25.5	59.5	10	2		10			
10	2	B-17,18,AEROBICS	59	59.5	10	2		10 _			
15	3	B-8,16,27-32	80.5	80.5	10	2		10			
20	4	B-25,25A	22	15	10,	2		10			
25	5	B-4	27	27.5	10	2		10			
30	6	B-12,12A	55.5	55.5	10	2		10			
35	7	B-2,13,19,20-22	45.5	45.5	10	2		10			
	8	B-1,3,24	81	81	10	2		10			
40	-	B-9,10,11,11A	111.5	20	10	2		10			
45	9	DOMES, MAIN WINGS	40	40.5	10	2		10			
50	10		48	48	10	2		10			
55	11	SW LOWER DOME	48	48	10	2		10			
60	12	NE LOWER DOME		37	10	2		10			
65	13	MAIN FLR WEST	89.5	٠,	.0	-					

ECO-A, LSTC BUILDING

	Zone					Paramete	Acoustic	El	D		
Room	Reference	Room	Floor	Floor	Const	Plenum		Floor	Duplicate Floors	Duplicate	
Number	Number	Descrip	Length	Width	Type	Height	•			Rooms per	Depth
70	14	MAIN FLR EAST	61	61	10	2	Resistance	10	Multiplier	Zone	
75	15	112,119A,123A,	94.5	95	10	2		10			
B0	16	MAIN FLOOR CENTR	93	93.5	10	2		10			
B5	17	MAIN FLOOR SOUTH	51	51	10.	2		10			
90	18	L.DOME COMP. RMS.	63.5	63.5	10	2		10		1	
95	19	L.DOME OFFICES	71	71	10	2		10			
100	20	U.DOME	88.5	88.5	10	2		10			
105	21	RM 119, AH-8	1	1	.•	-		10			
110	22	RM 119A, AH-9	1	1							
115	23	RM 123, AH-10	1	1							
120	24	RM 127A, AH-11A	1	1							
125	25	RM 127A, AH-11B	1 .	1							
130	26	RM 127, AH-12	1	1							
135	27	AUX CNTRL, AH-14	1	1							
140	28	RM 110 UNDERFLOR	33	34	10	2		10			
145	29	RM 120A,122,126A	50	50	10	2		10	•		
150	30	RM 146A,148,148A	32	32	10	2		10			
155	31	204,205,206,207	63.5	63.5	10	2		10			

Card 21	Cooling	Room				meters				
Room	Room	Design	Cooling	Cooling		Heating	Heating	T'stat	Mass /	Carpet
lumber	Design DB	-		T'stat	Room	T'stat	T'stat	Location	No. Hrs	0n
	_	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor
	75 	50	75		70	70			HEAVY130	NO
0	75 	50	7 5		70	70			HEAVY130	NO
5	75	50	75		70	70			HEAVY130	NO
0	7 5	50	75		70	70			HEAVY130	NO
5	75	50	75		70	70			HEAVY130	
0	7 5	50	75		70	70			HEAVY130	
5	75	50	75		70	70			HEAVY130	
0	75	50	75		70	70			HEAVY 130	
;	70	45	70		70	70			HEAVY 130	
)	75	50	75		70	70			HEAVY130	
5	75	50	75		70	70			HEAVY130	
)	75	50	7 5		70	70				
;	75	50	75	*	70	70			HEAVY130	
	75	50	75		70			*	HEAVY130	
5	75	50	75		70	70			HEAVY130	
)	70	45	70			70			HEAVY130	
5	75	50	75 75		70 70	70			HEAVY130	NO
0	70				70	70			HEAVY130	NO
5	75	45	70		70	70			HEAVY130	NO
		50	75 		70	70			HEAVY130	NO
00	75 	50	75		70	70			HEAVY130	NO
05	70	45	70		70 ·	70				
10	70	45	70		70	70				

Card 21				Therm	ostat Param	eters				
	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location	No. Hrs	0n
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor
115	70	45	70		70	70				
120	70	45	70		70	70				
125	70	45	70		70	70				
130	70	45	70		70	, 70 •				
135	70	45	70		70	70				
140	70	45	70		70	70				
145	70	45	70		70	70				
150	70	45	70		70	70				
155	70	45	70		70	70				

Card 22	!			Roof Par	ameters				
		Roof							
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof	Roof	Roof
Number	Number	Floor?	Length	Width	U-Value	Type	Direction	Tilt	Alpha
50	1	YES			0.18	19			.4
100	1	NO	88	88	0.18	19			.4

Card 24	,			· Wall P	arameters				
					Wall				Ground
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance
Number	Number	Length	Height	U-Value	Type	Direction	Tilt	Alpha	Multiplier
50	1	26.5	31	0.18	94	0		.4	
50	2	26.5	31	0.18	94	90		.4	
50	3	26.5	31	0.18	94	180		.4	
50	4	26.5	31	0.18	94	270		.4	
55	1	42	15	0.18	94	0		.4	
55	2	42	15	0.18	94	90		.4	
55	3	42	15	0.18	94	180		.4	
55	4	42	15	0.18	94	270		.4	
60	1	42	15	0.18	94	0		.4	
60	2	42	15	0.18	94	90		.4	
60	3	42	15	0.18	94	180		.4	
60	4	42	15	0.18	94	270		.4	
90	1	37.5	10	0.18	94	0		.4	
90	2	37.5	10	0.18	94	90		.4	
90	3	37.5	10	0.18	94	180		.4	
90	4	37.5	10	0.18	94	270		.4	
95	1	47	10	0.18	94	0		.4	
95	2	47.5	10	0.18	94	90		.4	
95	3	47	10	0.18	94	180		.4	
95	4	47.5	10	0.18	94	270		.4	
100	1	78	29	0.18	94	Ò		.4	
100	2	78.5	29	0.18	94	90		.4	

Card 24				Wall P	arameters Wall				Ground Reflectance
Room Number 100 100	Wall Number 3 4	Wall Length 78 78.5	Wall Height 29 29	Wall U-Value 0.18 0.18	COMPLET	Wall Direction 180 270	Wall Tilt	****	Multiplier

ard 26-				S	chedules - Reheat	Cooling	Heating	Auxiliary	Room	Daylightin Controls
oom		Lights	Ventilation	Infiltration	Minimum	Fans	Fan	Fan	EXHAUST	
		OFICEL25								
	OFFICEP1	OFICEL26								
15	OFFICEP1	CLGONLY								
20	•	CLGONLY								
25		CLGONLY								:
30	OFFICEP1	CLGONLY								•
35	OFFICEP1	CLGONLY								
40		CLGONLY								
45	OFFICEP1	CLGONLY								
50	OFFICEP1									
55	OFFICEP1									
60	OFFICEP1	CLGONLY								
65	OFFICEP1	OF I CEL2								
70	OFFICEP'	OFFICEL								
75	OFFICEP									
80	OFFICEP	1 OFICEL2								
85	OFFICEP	1 OFFICE								
90	OFFICEP									
95	OFF1CEF									
100	OFFICE		Y							
105	CLGONL'	Y								
110	CLGONL	Y								
115	CLGONL									
120	CLGONL									
125	CLGON									
130	CLGONI	_Y								
135	CLGON	LY								
140	CLGON	LY								

					•		 	
Room Number 5 10 15 20	People Units PEOPLE PEOPLE PEOPLE	Sensible 250 250	people		Lighting	Factor		hting Reference Point 2

					Peopl	e and Ligh	ts		Percent	Daylig	hting
Card 27- Room Number	People Value	People Units	People Sensible	People Latent	Lighting Value 2060	Lighting Units WATTS	Fixture Type SUSFLUOR	Ballast Factor		Reference Point 1	Reference Point 2
25 30 35	2	PEOPLE	250	200	2683 1115 3683	WATTS WATTS WATTS	ASHRAE1 ASHRAE1 ASHRAE1				
40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130	3 1 1 3 7 13 15 12 11 16 18 19 1 1	PEOPLE	250 250 250 250 250 250 250 250	200 200 200 200 200 200 200 200 200 200	4838 374 2870 3024 5967 3463 13978 11936 4403 5302 6382 9998	WATTS	ASHRAE1 ASHRAE1 ASHRAE1 SUSFLUOR ASHRAE1 ASHRAE1 ASHRAE1 ASHRAE1 ASHRAE1 ASHRAE1 ASHRAE1 ASHRAE1				

Misc												
	Room Number 5 10 15 20 30 40 45 55 60 65 70 85 90 95	Misc Equipment Number 1 1 1 1	Descrip TYP. OFFICE EQ. TYP. OFFICE EQ. TYP. OFFICE EQ. ELEV. MOTOR OFFICE, LIGHT EQ MISC. EQ. TYP OFFICE EQ	Consump Value 8500 1430 13814 6230 4636 13132 4250 830 7140 9040 12445 9220 4980 23580 32541	Energy Consump Units WATTS	Schedule Code OFFICEL1 OFFICEL1 CLGONLY OFFICEL1 OFFICEL1 OFFICEL OFFICEL OFFICEL CLGONLY OFFICEL OFFICEL OFFICEL OFFICEL OFFICEL OFFICEL OFFICEL	Energy Meter Code 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	of Load	Misc. Load to Room	Misc. Sens	_	

Equipment Descrip COMPUTERS - U C COMPUTERS - U C COMPUTERS - U C C C C C C C C C C C	Va PS 71' PS 47 PS 35 PS 35 PS 35 PS 26 PS 41 PS 41 PS 41 PS 41 PS 41	Lue Unit 94 WAT1 700 WAT1 661 WAT3 661 WAT3 320 WAT2 214 WAT8 892 WAT 0978 WAT4 434 WAT8 435 WAT8 435 WAT8 436 WAT8 436 WAT8 436 WAT8 436 WAT8 436 WAT8 437 WAT8 447	OFFICEM1	Code ELEC ELEC ELEC ELEC ELEC ELEC ELEC ELE	of Load Sensible		Misc. Sens to Ret. Air	Fraction	AIT Pa
Descrip COMPUTERS - U C COMPUTERS - U C COMPUTERS - U C COMPUTERS - U C	PS 711 PS 47 PS 35 PS 35 PS 35 PS 26 PS 26 PS 41 PS 41 PS 41 PS 41 PS 41 PS 41	94 WAT1 661 WAT 661 WAT 661 WAT 320 WAT 214 WAT 892 WAT 0978 WAT 434 WAT	OFFICEM1	ELEC ELEC ELEC ELEC ELEC ELEC ELEC ELEC	36131044		·		
COMPUTERS - U C COMPUTERS - U	19PS 47 19PS 35 19PS 35 19PS 73 19PS 27 19PS 41 19PS 41 19PS 41 19PS 41	700 WAT' 661 WAT' 661 WAT 320 WAT 214 WAT 892 WAT 0978 WAT 434 WA'	OFFICEM1 TS OFFICEM1 TS OFFICEM1 TS OFFICEM1 TS OFFICEM1 TS OFFICEM1 TS OFFICEM1 TTS OFFICEM1 TTS OFFICEM1 TTS OFFICEM1	ELEC ELEC ELEC ELEC ELEC ELEC ELEC			·		
COMPUTERS - U C COMPUTERS - U C COMPUTERS - U C C C C C C C C C C C C C C C C C C C	IPS 47 IPS 35 IPS 35 IPS 35 IPS 22 IPS 24 IPS 41 IPS 41 IPS 41 IPS 4	661 WAT 661 WAT 320 WAT 214 WAT 892 WAT 0978 WAI 434 WA' 17545 WA'	TS OFFICEM1 TS OFFICEM1 TS OFFICEM1 TS OFFICEM1 TS OFFICEM1 TS OFFICEM1 TTS OFFICEM1 TTS OFFICEM1	ELEC ELEC ELEC ELEC ELEC ELEC			÷		
COMPUTERS - L C COMPUTERS - L C C C C C C C C C C C C C C C C C C C	UPS 35 UPS 35 UPS 73 UPS 26 UPS 46 UPS 41 UPS 4 UPS 4	561 WAT 320 WAT 214 WAT 892 WAT 0978 WAT 434 WA'	TS OFFICEM1 TS OFFICEM1 TS OFFICEM1 TS OFFICEM1 TS OFFICEM1 TTS OFFICEM1 TTS OFFICEM1	ELEC ELEC ELEC ELEC ELEC			·		
COMPUTERS - L C COMPUTERS - L C C C C C C C C C C C C C C C C C C C	UPS 35 UPS 73 UPS 26 UPS 46 UPS 41 UPS 49 UPS 4	320 WAT 214 WAT 892 WAT 0978 WAT 434 WAT	TS OFFICEM1 TS OFFICEM1 TS OFFICEM1 TS OFFICEM1 TTS OFFICEM1 TTS OFFICEM1	ELEC ELEC ELEC ELEC					
COMPUTERS - COMP	UPS 73 UPS 26 UPS 44 UPS 19 UPS 4 UPS 1	214 WAT 892 WAT 0978 WAT .434 WAT	TS OFFICEM1 TS OFFICEM1 TS OFFICEM1 TTS OFFICEM1 TTS OFFICEM	ELEC ELEC ELEC					
COMPUTERS - COMPUTERS - COMPUTERS - COMPUTERS - COMPUTERS -	UPS 22 UPS 44 UPS 11 UPS 4 UPS 1	892 WAT 0978 WAT .434 WA 17545 WA	TS OFFICEM1 TTS OFFICEM1 TTS OFFICEM1 TTS OFFICEM	ELEC ELEC					
COMPUTERS - COMPUTERS - COMPUTERS - COMPUTERS -	UPS 41 UPS 11 UPS 4 UPS 1	0978 WAT .434 WAT 17545 WAT	TTS OFFICEM ¹ TTS OFFICEM ² TTS OFFICEM ³	ELEC					
COMPUTERS - COMPUTERS - COMPUTERS -	ups 1 ups 4 ups 1	.434 WA 17545 WA	TTS OFFICEM' TTS OFFICEM'	ELEC					
COMPUTERS - COMPUTERSVentilat	UPS 4 UPS 1	7545 WA	rts OFFICEM'	ELEC					
COMPUTERS -	ups 1	7545 WA		1 ELEC					
Ventilat									
Ventilat			- Boom Airflow	s					
Ventilat			- ROOM ATTITUE	Infiltr	ation		Reheat Mini	imum	
	10n	ing		j	Heati	ng	Keneat min	Units	
011113		Units	Value	Units	Value	Units	Value	0,11,10	
Units	Value		,						
CFM									
CFM									
CFM									
CFM									
CFM									
CFM									
CFM									
CFM									
CFM									
CFM									
CFM	393								
CFM	393								
CFM	393								
CFM	394								
CFM	394	CFM							
CFM	375	CFM							
CFM	375								
CFM	375	CFM							
CFM	375	CFM							
	1000	CFM				•			
	300	CFM							
	CFM	CFM 163 CFM 163 CFM 164 CFM 251 CFM 251 CFM 251 CFM 251 CFM 251 CFM 393 CFM 393 CFM 393 CFM 393 CFM 394 CFM 375 CFM 375 CFM 375 CFM 375 CFM 1000	CFM 163 CFM CFM 163 CFM CFM 164 CFM CFM 251 CFM CFM 393 CFM CFM 395 CFM CFM 395 CFM CFM 375 CFM	CFM 163 CFM CFM 163 CFM CFM 164 CFM CFM 251 CFM CFM 393 CFM CFM 395 CFM CFM 395 CFM CFM 397 CFM CFM 397 CFM CFM 398 CFM CFM 399 CFM CFM 375 CFM	CFM 163 CFM CFM 163 CFM CFM 164 CFM CFM 251 CFM CFM 393 CFM CFM 394 CFM CFM 394 CFM CFM 395 CFM CFM 375 CFM	CFM 163 CFM CFM 163 CFM CFM 164 CFM CFM 251 CFM CFM 393 CFM CFM 395 CFM CFM 396 CFM CFM 397 CFM CFM 375 CFM	CFM 163 CFM CFM 163 CFM CFM 164 CFM CFM 251 CFM CFM 393 CFM CFM 395 CFM CFM 396 CFM CFM 397 CFM CFM 397 CFM CFM 398 CFM CFM 399 CFM	CFM 163 CFM CFM 164 CFM CFM 164 CFM CFM 251 CFM CFM 393 CFM CFM 395 CFM CFM 395 CFM CFM 397 CFM CFM 398 CFM CFM 399 CFM	CFM 163 CFM CFM 164 CFM CFM 251 CFM CFM 393 CFM CFM 395 CFM CFM 395 CFM CFM 396 CFM CFM 397 CFM CFM 397 CFM CFM 398 CFM CFM 399 CFM CFM 399 CFM CFM 399 CFM CFM 399 CFM CFM 390 CFM CFM 391 CFM CFM 395 CFM CFM 396 CFM CFM 397 CFM CFM 375 CFM

card 30					Fan Airflo	ws				
Cara 30		Ma	in				liary			
Room	Cool			ing	Cool	ling		ting	Room E	Units
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value 790	CFM
15	10917	CFM	10917	CFM					790	Crn
20	700	CFM	700	CFM						
25	800	CFM	800	CFM						
30	3025	CFM	3025	CFM			•			
35	845	CFM	845	CFM						
40	17300	CFM	17300	CFM						
45	9060	CFM	9060	CFM						
50	1100	CFM	1100	CFM						
55	1570	CFM	1570	CFM						
60	1910	CFM	1910	CFM						
65	2905	CFM	2905	CFM						
70	3075	CFM	3075	CFM						
75	6840	CFM	6840	CFM					3769	CFM
80	5952	CFM	5952	CFM					3,07	-
85	2339	CFM	2339	CFM	:				,	
90	4268	CFM	4268	CFM						
95	3824	CFM	3824	CFM						
100	12518	CFM	12518	CFM						
105	8643	CFM	8643	CFM						
110	11962	CFM	11962	CFM						
115	4780	CFM	4780	CFM						
120	7526	CFM	7526	CFM						
125	7467	CFM	7467	CFM						
130	8800	CFM	8800	CFM						
135	11513	CFM	11513	CFM						
140	5409	CFM	5409	CFM						
145	10620	CFM	10620	CFM						
150	8893	CFM	8893	CFM						
155	23005	CFM	23005	CFM						
									-	

ion Partition Length 43 68.5 92.5 26.5 27.5	Height 43 68.5 93 26.5	Partition U-Value .18 .18 .18	Type 110 110 110 110	Flag CONSTANT CONSTANT CONSTANT	Temp 63 63 63 63	Temp 63 63 63 63	Room No
43 68.5 92.5 26.5	43 68.5 93 26.5	.18 .18	110 110	CONSTANT CONSTANT	63 63	63 63	
68.5 92.5 26.5	68.5 93 26.5	.18	110	CONSTANT	63	63	
92.5 26.5	93 26.5	.18					
26.5	26.5	0.18	110	CONSTANT	63	63	
	27	0.18	110	CONSTANT	63	63	
55.5	55.5	0.18	110	CONSTANT	63	63	
	-		110	CONSTANT	63	63	
-			110	CONSTANT	63	63	
-				CONSTANT	63	63	
					63	63	
			-		71	5 5	
89.5						h.	
	64 50 111.5 45 89.5 89.5	50 10 111.5 10 45 45 89.5 37	50 10 0.18 111.5 10 0.18 45 45 0.18 89.5 37 0.18	50 10 0.18 110 111.5 10 0.18 110 45 45 0.18 110 89.5 37 0.18 110	50 10 0.18 110 CONSTANT 111.5 10 0.18 110 CONSTANT 45 45 0.18 110 CONSTANT 89.5 37 0.18 110 CONSTANT	50 10 0.18 110 CONSTANT 63 111.5 10 0.18 110 CONSTANT 63 45 45 0.18 110 CONSTANT 63 89.5 37 0.18 110 CONSTANT 71	64 10 0.18 110 CONSTANT 63 63 111.5 10 0.18 110 CONSTANT 63 63 115 45 0.18 110 CONSTANT 63 63 89.5 37 0.18 110 CONSTANT 71 55

KOOM	Partition	Partition	Partition	ition Param Partition	Const	Temp		Heating	
Number	Number	Length	Height	ป-Value	Type	Flag	Temp	Temp	Room No
75	1	87	87	0.18	110	CONSTANT	71	55	
35	1	60	60	0.18	110	CONSTANT	71	55	

System Section Alternative #2 -----

Card 39- System Alternative Description

EXISTING SECONDARY EQUIPMENT AND SYSTEMS

Card 40----- System Type -----------OPTIONAL VENTILATION SYSTEM-----System Ventil Set System Cooling Heating Cooling Heating Static Number Type Location SADByh SADByh Schedule Schedule Pressure 1 BPMZ 2 BPMZ 3 TRH 4 TRH 5 TRH ROADK .389 BPMZ COMP COMP COMP 10 COMP 11 COMP 12 COMP 13 COMP 14 TRH

Set	Ref	#1	Ref	#2	Ref	#3	Ref	#4	Ref	#5	Ref	#6
Number	Begin	End	Begin	End	Begin	End	. Begin	End	Begin	End	Begin	End
1	1	3					, 203,	2170	begin	LIIG	begin	End
2	4	8										
3	9	9										
4	10	15										
5	16	19										
6 -	20	20										
7	21	21										
8	22	22										

Card 41					Zone A	ssignme	nt					
System Set	Ref	#1	Ref	#2	Ref	#3	Ref	#4	Ref	#5	Ref	#6
Number	Begin	End	Begin	End	Begin	End	`Begin	End	Begin	End	Begin	End
9	23	23										
10	24	24										
11	25	25										
12	26	26			+		•					
13	27	27										
14	28	31										
11 12 13	25 26 27	25 26 27			÷							

System	Cool	Heat	Return	Mn Exh	Aux	Rm Exh	Cool	Return	Supply	Supply	Return
Set	Fan	Fan	Fan	Fan	Fan	Fan		Fan Mtr	Duct	Duct	Air
Number	SP	SP	SP	SP	SP	SP	Loc	Loc	Ht Gn	Loc	Path
1	1.75					1.0					
2	1.5			.326							
3	2.4			.208							
4	2.5			.613							
5	3.45					1.5					
6	2.1			.26							
7	0.92										
8	1.67										
9	0.64										
10	1.39										
11	1.54										
12	1.04										
13	1.64			.077							
14	3.25										

Card 43				Airflow D	esign Tem	peratures				
System	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Design
Set	Cooling	Cooling	Heating	Heating	Cooling	Cooling	Preheat	Preheat	Room	Ht Rec
Number	SADB	SADB	SADB	SADB	Lv DB	Lv DB	Lv DB	Lv DB	RH	Diff
1					63	63				
2					63	63				
3					54 -	54			~	
4					49.5	49.5				
5					50	50				
6				•	62	62				
14					54	54				

Card 45				Equ	ipment Sche	dules				
System	Main		Direct	Indirect	Auxiliary	Main	Main			Auxiliary
Set	Cooling		Evap	Evap	Cooling	Heating	Preheat	Reheat	Mech.	Heating
Number	Coil	Economizer	Coil	Coil	Coil	Coil	Coil	Coil	Humidity	Coil
1						OFF	OFF	OFF		

ard 45 [.] ystem et	Main Cooling		Direct Evap	Indirect Evap	Auxiliary Cooling	Main Heating	Main Preheat	Reheat	Mech.	Auxiliary Heating	
	Coil		•	Coil	Coil	Coil	Coil	Coil	Humidity	_	
		200110		•••		OFF	OFF	OFF			
						OFF	OFF	OFF			
						011	011	OII			
						•			÷		
		Ret Mn Exh						.ING FAN			
	an Fan I		Fan Fan			Air	Air	Size	0		
um Ef	ff Eff I	Eff Eff	Eff Eff	Eff	Eff	Value	Units	Meth	Confg		
									BLOW		
					•				BLOW		
,									BLOW		
4									BLOW		
ard 59					escription ,	/ TOD Sche	edules				
	El	ec Consump E	lec Demand	Demand	escription	/ TOD Sche	edules			nd Limit	
lterna	El ative Ti	ec Consump E me of Day 1	lec Demand ime of Day	Demand Limit					Demai	nd Limit Temperature	
lterna umber	El ative Ti	ec Consump E me of Day 1	lec Demand	Demand Limit Max KW A	lternative	Descripti	on			nd Limit Temperature	
terna	El ative Ti	ec Consump E me of Day 1	lec Demand ime of Day	Demand Limit Max KW A		Descripti	on		Demai	nd Limit Temperature	
lterna umber ard 60	El ative Ti Sc	ec Consump E me of Day 1 hedule 5	lec Demand ime of Day Schedule	Demand Limit Max KW A	ulternative EXISTING PR	Descripti IMARY EQUI	ON PMENT		Demai	nd Limit Temperature	
terna umber ard 60 pad A	El ative Tin Sc O	ec Consump E me of Day 1 hedule 5 Cooling	lec Demand ime of Day Schedule	Demand Limit Max KW A	ulternative EXISTING PR	Descripti IMARY EQUI Load Assig	on PMENT		Schedule	nd Limit Temperature Drift	
lterna umber ard 60 oad A	El ative Ti Sc O All Coil Loads To	ec Consump E me of Day 1 hedule 5 Cooling Equipment	lec Demand ime of Day Schedule	Demand Limit Max KW A E	Alternative EXISTING PR - Cooling -Group 3-	Descripti IMARY EQUI Load Assig	on PMENT gnment	 5Group	Schedule	nd Limit Temperature Drift 7Group 8-	-Group
lterna umber ard 60 oad A sgn L ef C	El ative Ti Sc O All Coil Loads To Cool Ref	ec Consump E me of Day 1 hedule S Cooling Equipment Sizing E	Elec Demand Time of Day Schedule Group 1- Begin End	Demand Limit Max KW A E	Alternative EXISTING PR - Cooling -Group 3-	Descripti IMARY EQUI Load Assig	on PMENT gnment	 5Group	Schedule	nd Limit Temperature Drift	-Group
terna mber ard 60 pad A sgn L	El ative Ti Sc O All Coil Loads To	ec Consump E me of Day 1 hedule S Cooling Equipment S Sizing E	lec Demand ime of Day Schedule	Demand Limit Max KW A E	Alternative EXISTING PR - Cooling -Group 3-	Descripti IMARY EQUI Load Assig	on PMENT gnment	 5Group	Schedule	nd Limit Temperature Drift 7Group 8-	-Group
terna mber ard 60 pad A sgn L ef C	El ative Ti Sc O All Coil Loads To Cool Ref 1	ec Consump E me of Day 1 hedule S Cooling Equipment Sizing E PKPLANT	Elec Demand Time of Day Schedule Group 1- Begin End The Segin 14	Demand Limit Max KW A E Group 2- Begin End	Ling Equipm	Descripti IMARY EQUI Load Assig -Group 4 Begin End	on PMENT gnment Group ! d Begin E	5Group nd Begin	Schedule Schedule 6Group End Begin	nd Limit Temperature Drift 7Group 8- End Begin End E	-Group Begin !
ard 60 pad A sgn L ef 0	El ative Ti Sc O All Coil Loads To Cool Ref 1	ec Consump E me of Day 1 hedule S Cooling Equipment Sizing E PKPLANT	lec Demand ime of Day Schedule Group 1- Begin End 1 14	Demand Limit Max KW A E Group 2- Begin End	Ling Equipm	Descripti IMARY EQUI Load Assig -Group 4- Begin End	on PMENT Gnment Group ! Begin E	5Group nd Begin	Schedule 6- Group End Begin	nd Limit Temperature Drift 7Group 8- End Begin End E	-Group Begin :
ard 60 pad A sgn L ef C ard 62 ool Ec	El ative Tin Sc O All Coil Loads To Cool Ref 1	ec Consump E me of Day 1 hedule S Cooling Equipment Sizing E PKPLANT	lec Demand ime of Day Schedule Group 1- Begin End 1 14	Demand Limit Max KW A E Group 2- Begin End	Ling Equipm	Descripti IMARY EQUI Load Assig -Group 4 Begin End	on PMENT Gnment Group ! Begin E	5Group nd Begin	Schedule 6- Group End Begin S	nd Limit Temperature Drift 7Group 8- End Begin End E	-Group Begin :
ard 60 oad A sgn L ef C ard 62 ool Ec	Elative Tin Sc O All Coil Loads To Cool Ref 1 2 quip	ec Consump E me of Day 1 hedule S Cooling Equipment Sizing E PKPLANT	lec Demand ime of Day Schedule Group 1- Gegin End 1 14	Demand Limit Max KW A Group 2- Begin End	Ling Equipm	Descripti IMARY EQUI Load Assig -Group 4- Begin End	on PMENTGroup : Begin E	5Group nd Begin VERY	Schedule 6- Group End Begin S	nd Limit Temperature Drift 7Group 8- End Begin End E	-Group Begin nd t
ard 60 oad A sgn L ef C cool Ec cool Ec	Elative Tin Sc O All Coil Loads To Cool Ref 1 2	ec Consump E me of Day 1 hedule S Cooling Equipment Sizing E PKPLANT	lec Demand ime of Day Schedule Group 1- Gegin End 1 14	Demand Limit Max KW A Group 2- Begin End	Ling Equipm	Descripti IMARY EQUI Load Assis -Group 4- Begin End ent Parame	on PMENTGroup : Begin Ed Sters HEAT RECO	5Group nd Begin VERY VERY Value U	Schedule 6Group End Begin S S nits N	nd Limit Temperature Drift 7Group 8- End Begin End E	-Group Begin I nd t

Car	a 63			Cooling Pu	mps and ker	erences				
Coo	lCHILLED	WATER	CONDE	NSER	HT REC	or AUX	Switch-			
Ref	Full Load	full Load	Full Load	Full Load	Full Load	Full Load	over	Cold	Cooling	Misc.
Num	Value	Units	Value	Units	Value	Units `	Control	Storage	Tower	Access.
1	39.3	KW	27.5	KW					1	1
2	0	KW	18.3	KW					2	

Card	64			Cooli	ng Equip	ment Optio	ns			
Cool	Max	Load		Free		Cond	Cond	Cond Rej	Cond Rej	Cond Rej
Ref	CM	Shed	Evap	Cooling	Heat	Entering	Min Oper	To Ref	To Ref	a HW
Num	Reset	Economizer	Precool	Type	Source	Temp	Temp	Type	Number	Temp
1						85	65	HEATING	1	95
2						85	65	HEATING	2	95

Card 65						Heating	Load Assign	ment				
Load	All Coil											
Assignment	Loads To	-Grou	up 1-	-Grou	p 2-	-Group 3-	-Group 4-	-Group 5-	-Group 6-	-Group 7-	-Group 8-	-Group 9-
Reference	Heating Ref	Begir	n End	Begin	End	Begin End	Begin End	Begin End	Begin End	Begin End	Begin End	Begin End
1	1	3	5	14	14							
2	3	7	13									

Card 67	' <i>-</i>				Неа	iting Equ	ipment Pa	rameters -						
Heat	Equip	Number	HW Pmp				Energy		Seq	Switch				Demand
Ref	Code	Of	Full Ld		Cap'y		Rate		Order	over	Hot	Misc.		Limit
Number	Name	Units	Value	Units	Value	Units	Value	Units	Number	Control	Strg	Acc.	Cogen	Number
1	EQ2002	1	0	KW			100	PCTEFF						
2	EQ2002	1	0	KW			100	PCTEFF						
3	EQ2263	1						-						

Card 69 System			Fan Equip	ment Parame	eters		
Set	Cooling	Heating	Return	Exhaust	Auxiliary	Room	Optional
Number	Fan	Fan	Fan	Fan	Supply	Exhaust	Vent <u>i</u> lation
1	EQ4003					EQ4003	EQ4003
2	EQ4003			EQ4003			
3	EQ4003		•	EQ4003	•		
4	EQ4003			EQ4003			
5	EQ4003					EQ4003	EQ4003
6	EQ4003			EQ4003			
7	EQ4003						
8	EQ4003						
9	EQ4003				•		**
10	EQ4003						
11	EQ4003						
12	EQ4003						
13	EQ4003			EQ4003			
14	EQ4003						

		MAIN S	YSTEM-		UINER	31311	-11	DEINA	ND LIMIT	Room C						
		Heat		Exh	Aux F	Room (0pt				ent					
	Fan	Fan	Fan	Fan	Sup 1	Exh \	Vent	Cool He			an					
	K₩	KW	KW	KW	KW 1		KW	Fan Fa	n Fan	Fan	gi i					
ber	6.5	κ.,				1.2	.25									
	10.2			.652												
				.415					•							
	6.5			1.225	5											
	17.3					2.7	.779									
	13.9			.519												
	7.4			.517												
	3.3															
	5.6															
	1.8															
}	3.7							•								
i	4.7															
2	3.3			45	,											
3	5.6			.156	•								:			
4	22.	7														
Base	8				Hourly	Hou	ırly			Equip Refer	ence	Limit	ing Ent	ering Lea	aving	
Base	Bi ity U er D C	ase tility escrip :HW PIP		ss		Hou	urly mand its NS	Utility Schedule Code AVAIL		Refer Numbe	ence		ing Ent	ering Lea p Ter	aving mp	
Base Utili Numbe 1 2	Bity U er D C	ase tility escrip :HW PIP	ING LOS	ss ss	Hourly Demand Value 4.64 77.4	Hou Den Uni TOH MBI	urly mand its NS H dense	Schedule Code AVAIL AVAIL	Energy Type CHILL- HOT-LD	Refer Numbe LD 1 1	ence r rs Num Of	Limit Numbe	er Tem Percent	Low Spd Energy	Low Spd Energy	
Base Utili Numbe 1 2 Card	Bity U er D C	ase tility escrip HW PIPI W PIPI	ING LOS	ss s	Hourly Demand Value 4.64 77.4	Hou Den Uni TOP MBI	urly mand its NS H dense	Schedule Code AVAIL AVAIL r / Cooli Energy Consump	Energy Type CHILL-I HOT-LD	Refer Numbe LD 1 1	ence r rs Num Of	Limit Numbe	ring Ent	Low Spd Energy	Low Spd	
Base Utili Numbe 1 2 Card	Bity U cr D Cr H d 74 Co er To	ase tility escrip HW PIPI W PIPI	ING LOS	ss s	Hourly Demand Value 4.64 77.4	Hou Den Uni TOM MBI	urly nand its NS H dense	Schedule Code AVAIL AVAIL - / Cooli Energy Consump Units	Energy Type CHILL- HOT-LD ng Tower Fluid Type	Refer Numbe LD 1 1 Paramete Tower	ence r rs Num Of Cel	Limit Numbe	er Tem Percent	Low Spd Energy	Low Spd Energy	
Base Utili Numbe 1 2 Card	Bity U er D C H 3 74 Co er To	ase tility escrip HW PIPI W PIPI oling wer	ING LOS	ss s	Hourly Demand Value 4.64 77.4	Hou Dem Uni TOP MBI	urly mand its NS H dense rgy sump ue 5	Schedule Code AVAIL AVAIL r / Cooli Energy Consump Units KW	Energy Type CHILL- HOT-LD ng Tower Fluid Type T-WATE	Refer Numbe LD 1 1 Paramete Tower Type R CTOW	ence r Num Of Cel	Limit Numbe	er Tem Percent	Low Spd Energy	Low Spd Energy	
Base Utili Numbe 1 2 Card Towe Ref	Bity U er D H H 74 Co er To EG	ase tility escrip HW PIPI Oling ouer	ING LOS	ss s	Hourly Demand Value 4.64 77.4	Hou Den Uni TOM MBI	urly mand its NS H dense rgy sump ue 5	Schedule Code AVAIL AVAIL - / Cooli Energy Consump Units	Energy Type CHILL- HOT-LD ng Tower Fluid Type	Refer Numbe LD 1 1 Paramete Tower Type R CTOW	ence r Num Of Cel	Limit Numbe	er Tem Percent	Low Spd Energy	Low Spd Energy	
Base Jtili Numbe 1 Card Towe Ref	Bity U er D H H 74 Co er To EG	ase tility escrip HW PIPI Oling wer ode	ING LOS	ss s	Hourly Demand Value 4.64 77.4	Hou Dem Uni TOP MBI	urly mand its NS H dense rgy sump ue 5	Schedule Code AVAIL AVAIL r / Cooli Energy Consump Units KW	Energy Type CHILL- HOT-LD ng Tower Fluid Type T-WATE	Refer Numbe LD 1 1 Paramete Tower Type R CTOW	ence r Num Of Cel	Limit Numbe	er Tem Percent	Low Spd Energy	Low Spd Energy	
Base Jtili Numbe 1 Card Towe Ref	Bity U er D H H 74 Co er To EG	ase tility escrip HW PIPI Oling wer ode	ING LOS	ss s	Hourly Demand Value 4.64 77.4	Hou Dem Uni TOP MBI	urly mand its NS H dense rgy sump ue 5	Schedule Code AVAIL AVAIL r / Cooli Energy Consump Units KW	Energy Type CHILL- HOT-LD ng Tower Fluid Type T-WATE	Refer Numbe LD 1 1 Paramete Tower Type R CTOW	ence r Num Of Cel	Limit Numbe	er Tem Percent	Low Spd Energy	Low Spd Energy	
Base Jtili Numbe 1 Card Towe Ref	Bity U er D H H 74 Co er To EG	ase tility escrip HW PIPI Oling wer ode	ING LOS	ss s	Hourly Demand Value 4.64 77.4	Hou Dem Uni TOM MBI - Cond Ener / Cons Valu 12.1	urly mand its NS H densei rgy sump ue 5	Schedule Code AVAIL AVAIL - / Cooli Energy Consump Units KW	Energy Type CHILL-I HOT-LD ng Tower Fluid Type T-WATE	Refer Number 1 1 Paramete Tower Type R CTOWN	ence r Num Of Cel R 1	Limit Numbe	er Tem Percent	Low Spd Energy	Low Spd Energy	
Jtili Numbe Towe Ref 1	ity U er D C H 174 Co er To Cc EC	ase tility escrip EHW PIPI Oling ouer ode 25100	Capa	ss s	Hourly Demand Value 4.64 77.4	Hou Dem Uni TOM MBI - Cond Ener / Cons Valu 12.1	urly mand its NS H densel rgy sump ue 5	Schedule Code AVAIL AVAIL T / Cooli Energy Consump Units KW KW	Energy Type CHILL-I HOT-LD ng Tower Fluid Type T-WATE	Refer Number 1 1 Paramete Tower Type R CTOWN	ence r Num Of Cel R 1	Limit Numbe	er Tem Percent	Low Spd Energy Value	Low Spd Energy Units	
Jtili Numbe Towe Ref 1	ity U er D C H 174 Co er To Cc EC	ase tility escrip thw PIPI oling wer ode a5100	Capa	city (Hourly Demand Value 4.64 77.4 Capacity Units	Hou Dem Uni TOP MBI Cond Ener / Cons Valu 12.	urly mand its NS H densel rgy sump ue 5	Schedule Code AVAIL AVAIL / Cooli Energy Consump Units KW KW	Energy Type CHILL- HOT-LD Ing Tower Fluid Type T-WATE T-WATE	Refer Number 1 1 Paramete Tower Type R CTOWN	ence r Num Of Cel R 1	Limit	Percent Airflow Low Spd	Low Spd Energy	Low Spd Energy Units	Sched
Base Utili Numbe 1 2 Card Towe Ref 1 2	8: ity U cr D Co Co EC EC rd 75- #1	ase tility escrip EHW PIPI oling over ode a5100	Capa	city (Hourly Demand Value 4.64 77.4	Hou Dem Uni TOM MBI - Cond Ener / Cons Valu 12.1	urly mand its NS H densel rgy sump ue 5	Schedule Code AVAIL AVAIL T / Cooli Energy Consump Units KW KW Miscel #2 Equip	Energy Type CHILL- HOT-LD Ing Tower Fluid Type T-WATE T-WATE	Refer Number LD 1 1 Paramete Tower Type R CTOWN	ence r Num Of Cel R 1	Limit Numbe	Percent Airflow Low Spd	Low Spd Energy Value	Low Spd Energy Units	Sched Code
Base Utili Numbe 1 2 Card Towe Ref 1 2 Car	Barty U Proper To Co Ecc Frd 75- #1 sc Ecc	ase tility escrip thw PIPI oling wer ade a5100 a5100	ING LOS Capae Valu	city (Hourly Demand Value 4.64 77.4 Capacity Units	Hou Dem Uni TOP MBI Cond Ener / Cons Valu 12.	urly mand its NS H densel rgy sump ue 5	Schedule Code AVAIL AVAIL / Cooli Energy Consump Units KW KW	Energy Type CHILL- HOT-LD Ing Tower Fluid Type T-WATE T-WATE	Refer Number 1 1 Paramete Tower Type R CTOWN	ence r Num Of Cel R 1	Limit Numbe	Percent Airflow Low Spd	Low Spd Energy Value	Low Spd Energy Units	Sched Code
Base Utili Numbe 1 2 Card Towe Ref 1 2 Car	ity U T Co ase tility escrip EHW PIPI oling over ode a5100	Capar Valu	city (Hourly Demand Value 4.64 77.4 Capacity Units	Hou Dem Uni TOM MBI - Cond Ener / Cons Valu 12.1	urly mand its NS H densel rgy sump ue 5	Schedule Code AVAIL AVAIL T / Cooli Energy Consump Units KW KW Miscel #2 Equip	Energy Type CHILL- HOT-LD Ing Tower Fluid Type T-WATE T-WATE	Refer Number LD 1 1 Paramete Tower Type R CTOWN	ence r Num Of Cel R 1	Limit Numbe	Percent Airflow Low Spd	Low Spd Energy Value	Low Spd Energy Units	Sched Code	

Card 19- Load Alternative -

Number Description

3

ECO B - OCCUPANCY SENSORS

ECO-B, LSTC BUILDING

Card 20				GCITE	4	Paramete	Acoustic	Floor to	Duplicate	Duplicate	Perimeter
	Zone	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Room	Reference	Descrip	Length	Width	Туре	Height	Resistance	Height	Multiplier	Zone	
Number	Number	B-17 B,C,& D	25.5	59.5	10	2		10			
5	1	B-17,18,AEROBICS	59	59.5	10	2		10			
10	2 3	B-8,16,27-32	80.5	80.5	10	2		10			
15	4	B-25,25A	22	15	10	2		10			
20 25	5	B-4	27	27.5	10	2		10			
	6	B-12,12A	55.5	55.5	10	2		10			
30 35	7	B-2,13,19,20-22	45.5	45.5	10	2		10			
40	8	B-1,3,24	81	81	10	2		10			
45	9	B-9,10,11,11A	111.5	20	10	2		10			
50	10	DOMES, MAIN WINGS	40	40.5	10	2		10			
55	11	SW LOWER DOME	48	48	10	2		10			
60	12	NE LOWER DOME	48	48	10	2		10			
65	13	MAIN FLR WEST	89.5	37	10	2		10			
70	14	MAIN FLR EAST	61	61	10	2		10			
75	15	112,119A,123A,	94.5	95	10	2		10			
80	16	MAIN FLOOR CENTR	93	93.5	10	2		10			
85	17	MAIN FLOOR SOUTH	51	51	10	2		10			
90	18	L.DOME COMP. RMS.	63.5	63.5	10	2		10			
95	19	L.DOME OFFICES	71	71	10	2		10			
100	20	U.DOME	88.5	88.5	10	2		10			
105	21	RM 119, AH-8	1	1							
110	22	RM 119A, AH-9	1	1							
115	23	RM 123, AH-10	1	1							
120	24	RM 127A, AH-11A	1	1							
125	25	RM 127A, AH-11B	1	1							
130	26	RM 127, AH-12	1	1							
135	27	AUX CNTRL, AH-14	1	1							
140	28	RM 110 UNDERFLOR	33	34	10	2 .		10			
145	29	RM 120A,122,126A	50	50	10	2		. 10			
150	30	RM 146A,148,148A	32	32	10	2		10			
155	31	204,205,206,207	63.5	63.5	10	2		10			

-	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room		T'stat	T'stat	Room	T'stat	T'stat	Location	No. Hrs	0n
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	
5	75	50	75		70	70			HEAVY130	
10	75	50	75		70 ·	70			HEAVY130	NO
15	75	50	75		70	70			HEAVY130	NO
20	75	50	75		70	70			HEAVY130	
25	75	50	75		70	70			HEAVY130	
70	75	50	75		70	70			HEAVY130	NO

Card 21		• • • • • • • •	·	Therm	ostat Param	neters				
	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location	•	
Number	Design DB	RH	Driftpoint	Schedule	Design DB				Average	
35	75	50	75		70	70			HEAVY130	
40	75	50	75		70	70			HEAVY 130	
45	70	45	70		70	70			HEAVY130	
50	75	50	75		70	70 .			HEAVY130	
55	75	50	75		70	70			HEAVY130	
60	75	50	7 5		70	70			HEAVY130	
65	75	50	75		70	70			HEAVY130	
70	75	50	75		70	70			HEAVY 130	
75	75	50	75		70	70			HEAVY 130	
80	70	45	70		70	70			HEAVY130	
85	75	50	75		70	70			HEAVY130	
90	70	45	70		70	70			HEAVY130	
95	75	50	75		70	70			HEAVY130	
100	75	50	75		70	70			HEAVY130	
105	70	45	70		70	70			UENAL 120	NO.
110	70	45	70		70	70				
115	70	45	70		70	70				
120	70	45	70		70	70				
125	70	45	70		70	70				
130	70	45	70		70	70				
135	70	45	70		70	70				
140	70	45	70		70	70				
145	70	45	70		70	70				
150	70	45	70		70	70				
155	70	45	70		70	70				

Card 22	?			Roof Par	ameters				
		Roof							
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof	Roof	Roof
Number	Number	Floor?	Length	Width	U-Value		Direction		
50	1	YES			0.18	19			.4
100	1	NO	88	88	0.18	19			.4

Card 24	,		• • • • • • • • • • • • • • • • • • • •	· Wall P	arameters	;			-
Room	Wall	Wall	Wall	Wall	Wall Constuc	Wall	, Wall	Wall	Ground Reflectance
Number	Number	Length	Height	U-Value	Type	Direction	Tilt		Multiplier
50	1	26.5	31	0.18	94	0		.4	nattipe (c)
50	2	26.5	31	0.18	94	90		.4	
50	3	26.5	31	0.18	94	180		.4	
50	4	26.5	31	0.18	94	270		.4	
5 5	1	42	15	0.18	94	0		.4	
55	2	42	15	0.18	94	90		.4	

					Wall				Ground
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance
Number	Number	Length	Height	U-Value	Type	Direction	Tilt	Alpha	Multiplier
55	3	42	15	0.18	94	180		.4	
55	4	42	15	0.18	94	270		.4	
60	1	42	15	0.18	94	0		.4	
60	2	42	15	0.18	94	90		.4	
60	3	42	15	0.18	94	180		-4	
60	4	42	15	0.18	94	270		.4	
90	1	37.5	10	0.18	94	0		.4	
90	2	37.5	10	0.18	94	90		.4	
90	3	37.5	10	0.18	94	180		.4	
9 0	4	37.5	10	0.18	94	270		.4	
95	1	47	10	0.18	94	0		.4	
95	2	47.5	10	0.18	94	90		.4	
95	3	47	10	0.18	94	180		.4	
95	4	47.5	10	0.18	94 .	270		.4	
100	1	78	29	0.18	94	0		.4	
100	2	78.5	29	0.18	94	90		.4	
100	3	78	29	0.18	94	180		.4	
100	4	78.5	29	0.18	94	270		.4	

Card 26				S	chedules ·					
Room					Reheat	Cooling	Heating	Auxiliary		Daylighting
Number	People	Lights	Ventilation	Infiltration	Minimum	Fans	Fan	Fan	Exhaust	Controls
5	OFFICEP1	OFFICEL7								
10	OFFICEP1	OFFICEL8								
15	OFFICEP1	OFFICEL9								
20		OFICEL10								
25		OFICEL11								
30	OFFICEP1	OFICEL12					-			
35	OFFICEP1	OFICEL13								
40		CLGONLY								
45	OFFICEP1	OFICEL14								
50	OFFICEP1	CLGONLY								
55	OFFICEP1	OFICEL15								
60	OFFICEP1	OFICEL16								
65	OFFICEP1	OFICEL17	-	•			,-			
70	OFFICEP1	OF I CEL 18	•							
75	OFFICEP1	OFICEL19		•		,				
80	OFFICEP1	OFICEL20	•		•					
85	OFFICEP1	OFICEL21								
90	OFFICEP1	OFFICEL7								
95	OFFICEP1	OF I CEL 22								
100	OFFICEP1	OFICEL23								
105	CLGONLY									
110	CLGONLY			•			6.			
115	CLGONLY									

					\$	ichedul es			Auxiliar	v Room	Daylighting		
						Reheat	Cooling			Fyhaust	Controls		
Room				tion In	filtration	Minimum	'Fans	Fan	Fan	EXIIDOG			
Number	People	Lights	ventita	(1011 2111									
120	CLGONLY												
125	CLGONLY												
130	CLGONLY												
135	CLGONLY												
140	CLGONLY						•						
140	CEGGIII												
	_				Peopl	e and Ligh	its	 :	Percent	Daylig	ghting		
Card 2	7								percent	peference	Reference		
			nml n	People.	Lighting	Lighting	Fixture	Ballast	Lights to	Point 1	Point 2		
Room	People	People	People Sensible	Latent	Value	Units	Type	Factor	Ret. Air	Politic			
Number	Value	Units			1876	WATTS	ASHRAE1						
5	7	PEOPLE	250	200		WATTS	SUSFLUOF	₹					
10	3	PEOPLE	250	200	3263	WATTS	SUSFLUO		:				
15	2	PEOPLE	250	200	7204		SUSFLUO						
20					375	WATTS	SUSFLUO						
25					2060	WATTS	ASHRAE1						
	2	PEOPLE	250	200	2683	WATTS	-						
30	٤	. ••			1115	WATTS	ASHRAE1						
35					3683	WATTS	ASHRAE1						
40	_	250015	250	200	4838	WATTS	ASHRAE1	ı					
45	3	PEOPLE		200	374	WATTS	ASHRAE'	1					
50	1	PEOPLE	250	200	2870	WATTS	ASHRAE	1					
55	1	PEOPLE	250		3024	WATTS	ASHRAE	1					
60	3	PEOPLE		200	5967	WATTS	SUSFLU	OR					
65	7	PEOPLE		200		WATTS	ASHRAE	.1					
70	13	PEOPLE	250	200	3463	WATTS	ASHRAE						
75	15	PEOPLE	250	200	13978		ASHRAE						
80	12	PEOPLE	250	200	11936	WATTS	ASHRAE						
	11	PEOPLE		200	4403	WATTS						-	
85	16	PEOPL		200	5302	WATTS	ASHRA						
90		PEOPL		200	6382	WATTS	ASHRA						
95	18	PEOPL		200	9998	WATTS	ASHRA	ΕΊ					
100				200									
105		PEOPL		200									
110	1	PEOPL											
115	1	PEOPL		200									
120	1	PEOPL		200									
125	5 1	PEOP		200			_	•					
13	_	PEOP	LE 250	200									
13	-	PEOP	LE 250	200									
14	•	PEOP		200			•						
14													
								m					
	,					Misc	ellaneous	Equipment	Denocat	Percent	Percent		
Ca	ard 28				Energy	Energy		Energy		Micc Inad	Misc Sens		Optional
	Mi		e! a+		Consump	Consump	Schedule	Meter			to Ret. Air	Fraction	Air Path
			Equipment		Value	Units	Code	Code	Sensible	to Koom			
N	umber Nu		Descrip		8500	WATTS	OFFICEL1						
5	. 1		TYP. OFFIC	E EQ.	טטנס	,							

Card 28	,		<i></i>	Mis	cellaneous	Equipment					
	Misc		Energy	Energy		Energy	Percent		Percent		
Room	Equipment	Equipment	Consump	Consump	Schedule	Meter	of Load		Misc. Sens		
Number	Number	Descrip	Value	Units	Code	Code	Sensible	to Room	to Ret. Air	Fraction	Air Path
10	1	TYP. OFFICE EQ.	1430	WATTS	OFFICEL1						
15	1	TYP. OFFICE EQ.	13814	WATTS	CLGONLY						
20	1	ELEV. MOTOR	6230	WATTS	CLGONLY						
30	1	OFFICE, LIGHT EQ	4636	WATTS	OFFICEL1						
40	1	MISC. EQ.	13132	WATTS	CLGONLY						
45	1	TYP OFFICE EQ	4250	WATTS	OFFICEL1						
55	1	TYP OFFICE EQ	830	WATTS	OFFICEL1						
60	1	TYP OFFICE EQ	7140	WATTS	OFFICEL1						
65	1	TYP OFFICE EQ	9040	WATTS	OFFICEL1						
70	1	TYP OFFICE EQ	12445	WATTS	OFFICEL1						
85	1	TYP OFFICE EQ	9220	WATTS	OFFICEL1						
90	1	TYP OFFICE EQ	4980	WATTS	CLGONLY						
95	1	TYP OFFICE EQ	23580	WATTS	OFFICEL1						
100	1	MISC. OFFICE EQ	32541	WATTS	OFFICEL2						
105	1	COMPUTERS - UPS	5995	WATTS	OFFICEM1	ELEC					
110	1	COMPUTERS - UPS	7194	WATTS	OFFICEM1	ELEC					
115	1	COMPUTERS - UPS	4700	WATTS	OFFICEM1	ELEC					
120	1	COMPUTERS - UPS	3561	WATTS	OFFICEM1	ELEC					
125	1	COMPUTERS - UPS	3561	WATTS	OFFICEM1	ELEC					
130	1	COMPUTERS - UPS	7320	WATTS	OFFICEM1	ELEC					
135	1	COMPUTERS - UPS	2214	WATTS	OFFICEM1	ELEC					
140	1	COMPUTERS - UPS	4892	WATTS	OFFICEM1	ELEC					
145	1	COMPUTERS - UPS	10978	WATTS	OFFICEM1	ELEC					
150	1	COMPUTERS - UPS	4434	WATTS	OFFICEM1	ELEC					
155	1	COMPUTERS - UPS	17545	WATTS	OFFICEM1	ELEC					

)				- Room Airt	flows				
					Infil	tration			
					ling	Неа	ting	Reheat 1	Minimum-−
Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
163	CFM	163	CFM						
163	CFM	163	CFM						
164	CFM	164	CFM						
251	CFM	. 251	CFM						
251	CFM	251	CFM						
251	CFM	251	CFM						
251	ĊFM	251	CFM						
251	CFM	251	CFM	•					
800	CFM	800	CFM						
393	CFM	393	CFM						
393	CFM	393	CFM						
393	CFM	393	CFM						
393	CFM	393	CFM						
394	CFM	394	CFM	•	h.				
394	CFM	394	CFM						
	Value 163 163 164 251 251 251 251 251 800 393 393 393 393 394	VentiCooling Value Units 163 CFM 163 CFM 164 CFM 251 CFM 251 CFM 251 CFM 251 CFM 251 CFM 393 CFM 393 CFM 393 CFM 393 CFM 393 CFM 393 CFM 394 CFM	CoolingHear Value Units Value 163	Cooling	Cooling				

Card 29										
Room								ting	Reheat	Minimum
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
80	375	CFM	375	CFM						
85	375	CFM	375	CFM						
90	375	CFM	375	CFM						
95	375	CFM	375	CFM						
100	1000	CFM	1000	CFM						
135	300	CFM	300	CFM						

		Ma	in			Auxi				
Room	Cool	ling	Heat	ing	Coo	ling	Hea	ting	Room E	
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
5	2675	CFM	2675	CFM						
10	3180	CFM	3180	CFM						
15	10917	CFM	10917	CFM					790	CFM
20	700	CFM	700	CFM						
25	800	CFM	800	CFM						
30	3025	CFM	3025	CFM						
35	845	CFM	845	CFM						
40	17300	CFM	17300	CFM						
45	9060	CFM	9060	ÇFM						
50	1100	CFM	1100	CFM						
55	1570	CFM	1570	CFM						
60	1910	CFM	1910	CFM						
65	2905	CFM	2905	CFM						
70	3075	CFM	3075	CFM						
75	6840	CFM	6840	CFM						
80	5952	CFM	5952	CFM					3769	CFM
85	2339	CFM	2339	CFM						
90	4268	CFM	4268	CFM						
95	3824	CFM	3824	CFM						
100	12518	CFM	12518	CFM						
105	8643	CFM	8643	CFM						
110	11962	CFM	11962	CFM						
115	4780	CFM	4780	CFM						
120	7526	CFM	7526	CFM	•					
125	7467	CFM	7467	CFM	,					
130	8800	CFM	8800	CFM			,			
135	11513	CFM	11513	CFM		•				
140	5409	CFM	5409	CFM						
145	10620	CFM	10620	CFM						
150	8893	CFM	8893	CFM						
155	23005	CFM	23005	CFM						

Room	Partition	Partition	Par	tition Para	neters			· · · · · · · · · · · · · · · · · · ·	
Number	Number		raitition	Partition	Const	Temp		Heating	Adjacent
5	1	Length	Height	U-Value	Type	Flag	Temp	Temp	Room No
10	1	43	43	.18	110	CONSTANT	63	63	KOOM NO
15	1	68.5	68.5	.18	110	CONSTANT	63	63	
20	1	92.5	93	.18	110	CONSTANT	63	63	
	1	26.5	26.5	0.18	110	CONSTANT	63		
25	1	27.5	27	0.18	110	CONSTANT	63	63	
30	1	55.5	55.5	0.18	110	CONSTANT		63	
3 5	1	64	10	0.18	110		63	63	
40	1	50	10	0.18	110	CONSTANT	63	63	
45	1	111.5	10	0.18		CONSTANT	63	63	
60	1	45	45	0.18	110	CONSTANT	63	63	
65	1	89.5	37	0.18	110	CONSTANT	63	63	
70	1	89.5	37		110	CONSTANT	71	55	
75	1	87	87	0.18	110	CONSTANT	71	55	
85	1	60		0.18	110	CONSTANT	71	55	
		00	60	0.18	110	CONSTANT	71	55	

System Section Alternative #3 -----

Card 39- System Alternative

Number

Description

1 EXISTING SECONDARY EQUIPMENT AND SYSTEMS

System		1/		IAL VENTIL	ATION SYST	EM	
Set Number 1 2 3	System	Ventil Deck Location ROADK	Cooling SADBVh		Cooling Schedule	Heating Schedule	Fan Static
5 6	TRH BPMZ	ROADK					.389
7 8	COMP				-		
9	COMP						
10	COMP						
11	COMP						
12	COMP						
13	COMP						
14	TRH						

Card 41 System		 	 · Zone /	Assignment	:	 	 •••••	
Set Number	Ref Begin	Ref Begin	Ref Begin		Ref Begin	Ref Begin	Ref Begin	

Set	Ref	#1	Ref	#2 .	Ref	#3	` Ref	41/				
Number	Begin	End	Begin	End	Begin	End			Ref	#5	Ref	#6
2	4	8	•		begini	End	Begin	End	Begin	End	Begin	End
3	9	9										
4	10	15										
5	16	19										
5	20	20				•						
7	21	21										
3	22	22										
)	23	23										
0	24	24										
1	25	25										
2	26	26										
3	27	27			•							
4	28	31										

System	Cool	Heat	Return	Mn Exh	Aux	Rm Exh		3			
Set	Fan	Fan	Fan	Fan	Fan	Fan	Fan Mtr	Return	Supply		Return
Number	SP	SP	SP	SP	SP	SP	Loc		Duct	Duct	Air
1	1.75				۷.	1.0	LOC	Loc	Ht Gn	Loc	Path
2	1.5			.326		1.0					
3	2.4			.208							
4	2.5			.613							
5	3.45					1.5					
6	2.1			.26		1.5					
7	0.92										
8	1.67										
9	0.64										
10	1.39										_
11	1.54										
12	1.04										
13	1.64			.077							
14	3.25										

Card 43 System M Set C				riax iiiulii	חמותותות	Mayimum	Windows			
Number S 1 2 3	-	Cooling SADB	Heating SADB	neating	Cooling	Cooling Lv DB 63 63 54 49.5	Preheat	Preheat	Room RH	Design Ht Rec Diff

System Set Number 5 6	Cooli	ng ng	Maximum Cooling SADB	MIL	imum ting	Maxin	num	Minin	num ng	Maximum	Minimum	Maximum Preheat Lv DB	Minimum	Design Ht Rec Diff	
Card (5	. 														
System	Main	•••			Dire	 :t	Indi	- Equ	ipme	nt Sched iliary	dules				•
Set	Coolir	g			Evap		Evap			ling	Main Heating	Main	Dahasa		Auxiliary
Number	Coil		Economiz	er	•		Coil		Coi	-	Coil	Preheat Coil	Reheat Coil	Mech.	Heating
1											OFF	OFF	OFF	Humidity	COIL
2											OFF	OFF	OFF		
5											OFF	OFF	OFF		
•												,			
ard 47	 a Hta	 Pot	Mn Exh				Fan	Over	rides					•••••	
	n Fan							t Vnt				MAIN COOL	ING FAN	• • • • • • • • • • • • • • • • • • • •	
	f Eff				n Fa f Ef			Fan				Air	Size		
}				۲.		ı	Ef.	r	Eff	v	alue	Units	Meth	Confg	
														BLOW	
i														BLOW	
4														BLOW BLOW	
														520#	
	•		Equi	omen	t Sec	tion	Alte	rnat i	ve #	3					
					•										
aru by.	 F1	ec '	 Cons.——			- Equi	pmer	t Des	crip	tion /	TOD Schedu	ıles			
	ive Ti		oo, is diip	cre	- Delli	and D	emar	a						Demand	
umber		hedu			edule	Day L			•-					Т	emperature
	٠,			JUITE	.uute	M	ax K				escription			Schedule	Drift
					-			EX	1211	NG PRIMA	ARY EQUIPA	IENT			
					-									-	
ard 60-					·			••••	Coc	ina ta	- ـ ه اس				
الماسمه	l Coil	Coc	oling						, 000	ing Loa	ia Assigni	ent			
Dad At															
	ads To	Equ	ıi pment	-Gra	up 1-	-Gr	oun	2	Grou :	3	roup 4-	-Cna	•		
sgn Lo	ads To ol Ref	Equ Siz	uipment ing	-Gro Begi	up 1- n End	-Gr	oup in E	2 (nd R	Group eair	30	iroup 4-	-Group 5-	-Group	6Group 7	Group 8Gro d Begin End Beg

4 62					Cooting	Equipme	ent Para	HFAT	RECOVER'	(Sec	4		Demand	
l Equip	Num		C	JUE :			Capa	city		Energy-		Ord	der	Seq	Limit	
Code	Of	Capa	city	E	nergy		Capac	Unite	Val		its	Nu	m	Type	Number	
			Units	Value	e Uni	ts	Value		88	KW		1		SER		
Name	1	154	TONS	142	KW		91	TONS	88	Kh		2		SER		
EQ1010S	1	154	TONS	142	KW		91	TONS	•							
EQ1010S	•															
							•									
													-			
rd 63		. -		Coolir	ng Pumps	and Re	ference:	s Si	witch-							
rd 63 olCHILLI	ED WATE	₹	CO	NDENSER		-HT REC	. or AUA	Load 0	ver	Cold	Cooli					
olCHILLI of Full Loa	d Full	Load	Full Lo	ad ruce			l rull	. C	ontrol	Storage	Tower	· A	ccess			
ım Value	Unit	s	Value	Units	Va	lue	Unites	, -			1	1				
39.3	KW		27.5	KW							2					
0	KW		18.3	KW												
U	•••															
ard 64				Cooli	na Eauip	ment Op	tions -				 -:	and Re	- ·i			
ard 64				Free	.g -qF	Cond	Con	nd	Cond Rej	Cond R	ej co	אוט גכ שט	J			
ool Max	Load			Cooling		Enteri	ing Min	oper	To Ref	To Ret		II.M				
of CV	Shed				Source		Ten		Type	Number		emp e				
lum Reset	Econom	izer	Precool	iype	300,00	85	65		HEATING	1	95					
1						85	65		HEATING	2	95	•				
2																
Card 65 Load Assignment	All Co Loads	il To	-Group	1Grou	p 2(Heating	g Load A Grou	Assignme up 4 n End E	ent -Group 5 Begin En	-Group	6 End [-Group Begin	7- End	-Grou	up 8G n End Be	roup 9-
Load Assignment Reference 1	All Co Loads Heatir 1	il To ng Ref	-Group Begin 1	1Grou End Begir 5 14	p 20 a End Be 14	Heating Group 3 Egin En	g Load A Grou d Begin	Assignme up 4 n End E	ent -Group 5- Begin End	-Group	6 End [-Group Begin	7- End	-Grou	up 80 n End Be	roup 9- gin End
Load Assignment Reference 1 2	All Co Loads Heatin 1	il To ng Ref	-Group Begin 8 3	1Grou End Begir 5 14 13	p 20 1 End B0 14	iroup 3 egin En	Grou d Begin	up 4 n End E	-Group 5 Begin End	-Group	End i				up 8G	roup 9- gin End
Load Assignment Reference 1 2	All Co Loads Heatin 1	il To ng Ref	-Group Begin 8 3	1Grou End Begir 5 14 13	p 20 1 End B0 14	iroup 3 egin En	Grou d Begin	up 4 n End E	-Group 5 Begin End	-Group	End i				up 8G	Dema
Load Assignment Reference 1 2 Card 67	All Co Loads Heatin 1 3	il To ng Ref	-Group Begin 8 3 5	1Grou End Begin 5 14 13	p 20 1 End B0 14	iroup 3 egin En	Grou d Begin	up 4 n End E ment Par Energy	-Group 5 Begin End	-Group Begin	End E	itch			sc.	Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ed	All Co Loads Heatin 1 3	il To ng Ref Numbe	-Group Begin I 3 ' 7	1Grou End Begin 5 14 13	p 2 (a End Be 14	egin En	Grou d Begin g Equipa	up 4 n End E ment Par Energy Rate	-Group 5 Begin End Begin End	-Group Begin	End E	itch			sc.	Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ed Ref Co	All Co Loads Heatin 1 3	il To ng Ref Numbe	-Group Begin I 3 7	1Grou End Begir 5 14 13	p 20 End B6 14	egin En	Grou d Begin g Equipa	up 4 n End E ment Par Energy Rate Value	-Group 5 Begin End rameters Units	-Group Begin Seq Orde Numb	End E	itch				Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ed Ref Co Number N	All Co Loads Heatin 1 3	il To ng Ref Numbe Of Units	-Group Begin I 3 ' 7	1Grou End Begin 5 14 13 13 np Ld	p 20 End B6 14	egin En	Grou d Begin g Equipa	ment Par Energy Rate Value	-Group 5 Begin End Prameters Units PCTEFF	-Group Begin Seq Orde Numb	End E	itch			sc.	Dema Lim
Card 67 Heat Ed Ref Co Number N 1 E	All Co Loads Heatin 1 3	To T	-Group Begin I 3 ' 7	1Grou End Begir 5 14 13	p 20 End B6 14	egin En	Grou d Begin g Equipa	up 4 n End E ment Par Energy Rate Value	-Group 5 Begin End rameters Units	-Group Begin Seq Orde Numb	End E	itch			sc.	Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ed Ref Co Number N 1 E 2 E	All Co Loads Heatin 1 3 quip ode ame Q2002	To ng Ref Numbe Of Units 1	-Group Begin I 3 7 7 HW Pr Full	1Grou End Begin 5 14 13 13 np Ld e Unite	p 20 End B6 14	egin En	Grou d Begin g Equipa	ment Par Energy Rate Value	-Group 5 Begin End Prameters Units PCTEFF	-Group Begin Seq Orde Numb	End E	itch			sc.	Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ec Ref Co Number N 1 E 2 E	All Co Loads Heatin 1 3	To T	-Group Begin I 3 ' 7	1Grou End Begin 5 14 13 13 np Ld e Unite	p 20 End B6 14	egin En	Grou d Begin g Equipa	ment Par Energy Rate Value	-Group 5 Begin End Prameters Units PCTEFF	-Group Begin Seq Orde Numb	End E	itch			sc.	Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ed Ref Co Number N 1 E 2 E	All Co Loads Heatin 1 3 quip ode ame Q2002	To ng Ref Numbe Of Units 1	-Group Begin I 3 ' 7	1Grou End Begin 5 14 13 13 np Ld e Unite	p 20 End B6 14	egin En	Grou d Begin g Equipa	ment Par Energy Rate Value	-Group 5 Begin End Prameters Units PCTEFF	-Group Begin Seq Orde Numb	End E	itch			sc.	Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ed Ref Co Number N 1 E 2 E 3 E	All Co Loads Heatin 1 3 quip ode ame Q2002 Q2002	To ng Ref Numbe Of Units 1	-Group Begin I 3 ' 7 7 HW Pr Full Valu 0	1Grou End Begin 5 14 13 13 np Ld e Units KW	p 2 Ca End Ba 14 Caj S Va	aroup 3 egin En Heating P'y Lue Un	Grou d Begin g Equipa	ment Par Energy Rate Value 100	-Group 5 Begin End Prameters Units PCTEFF	-Group Begin Seq Orde Numb	End E	itch			sc.	Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ed Ref Co Number N 1 E 2 E 3 E	All Co Loads Heatin 1 3 quip ode ame Q2002 Q2002	To ng Ref Numbe Of Units 1	-Group Begin I 3 ' 7 7 HW Pr Full Valu 0	1Grou End Begin 5 14 13 13 np Ld e Unite	p 2 Ca End Ba 14 Caj S Va	aroup 3 egin En Heating P'y Lue Un	Grou d Begin g Equipa	ment Par Energy Rate Value 100	-Group 5 Begin End -ameters Units PCTEFF PCTEFF	-Group Begin Seq Orde Numb	End E	itch			sc.	Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ed Ref Co Number N 1 E 2 E 3 E	All Co Loads Heatin 1 3 quip oode ame Q2002 Q2002	To ng Ref Numbe Of Units 1 1	-Group Begin I 3 ' 7 7 HW Pr Full Valu O	1Grou End Begin 5 14 13 13 mp Ld e Unit: KW	p 2 Ca End Ba 14 Caj S Va	Group 3 Group 3 Heating P'Y Lue Un	Groud Begind	ment Par Energy Rate Value 100	-Group 5 Begin End -Grameters	-Group Begin Seq Orde Numb	Swir over	itch			sc.	Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ed Ref Co Number N 1 E 2 E 3 E	All Co Loads Heatin 1 3 quip ode ame Q2002 Q2002	To ng Ref Numbe Of Units 1 1	-Group Begin 1 3 7 7	1Grou End Begin 5 14 13 13 np Ld e Unit: KW KW	p 2 Ca End Ba 14 Caj S Va	egin End Heating P'y Lue Un	Groud Begind	ment Par Energy Rate Value 100	-Group 5 Begin End -ameters Units PCTEFF PCTEFF	-Group Begin Seq Orde Numb	Swir over	itch			sc.	Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ec Ref C Number N 1 E 2 E 3 E Card 69- System	All Co Loads Heatin 1 3 quip oode ame Q2002 Q2002	To ng Ref Numbe Of Units 1 1	-Group Begin I 3 ' 7 7 HW Pr Full Valu O	1Grou End Begin 5 14 13 13 mp Ld e Unit: KW	p 2 Ca End Ba 14 Caj S Va	egin End Heating P'y Lue Un	Groud Begind	ment Par Energy Rate Value 100	-Group 5- Begin End Frameters Units PCTEFF PCTEFF	-Group Begin Seq Orde Numb	Swir over	itch			sc.	Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ec Ref C Number N 1 E 2 E 3 E Card 69- System Set	All Co Loads Heatin 1 3 quip ode ame q2002 c02263	ill To ng Ref Numbe Of Units 1 1	-Group Begin 1 3 7 7	1Grou End Begin 5 14 13 13 np Ld e Unit: KW KW	p 20 End Be 14 Cal Salament Pa Exhau Fan	Group 3 Pegin End Heating P'Y Lue Und rameter Ist Au	Groud Begind	ment Par Energy Rate Value 100 100	-Group 5- Begin End Frameters Units PCTEFF PCTEFF	-Group Begin Seq Orde Numb	Swir over	itch			sc.	Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ec Ref Co Number N 1 E 2 E 3 E Card 69- System Set Number	All Co Loads Heatin 1 3 quip ode ame Q2002 Q2002 Q2002	To ng Ref Numbe Of Units 1 1 1 ing	-Group Begin 1 3 7 7	1Grou End Begin 5 14 13 13 np Ld e Unit: KW KW	p 20 a End Be 14 Cal b Va coment Pa Exhau Fan	egin End Heating P'y Lue Un rameter	Groud Begind	ment Par Energy Rate Value 100 100	-Group 5- Begin End Frameters Units PCTEFF PCTEFF	-Group Begin Seq Orde Numb	Swir over	itch			sc.	Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ec Ref Co Number N 1 E 2 E 3 E Card 69- System Set Number 1 2	All Co Loads Heatin 1 3 quip ode ame Q2002 Q2002 Q2002 Cool Fan EQ40	Ing 103	-Group Begin 1 3 7 7	1Grou End Begin 5 14 13 13 np Ld e Unit: KW KW	p 20 End Be 14 Cal Sument Pa Exhau Fan Eq400	Heating P'y Lue Un rameter St At St 03	Groud Begind	ment Par Energy Rate Value 100 100	-Group 5- Begin End Frameters Units PCTEFF PCTEFF	-Group Begin Seq Orde Numb	Swir over	itch			sc.	Dema Lim
Load Assignment Reference 1 2 Card 67 Heat Ec Ref Co Number N 1 E 2 E 3 E Card 69- System Set Number 1	All Co Loads Heatin 1 3 quip ode ame Q2002 Q2002 Q2002 Cool Fan EQ40	Ing 103	-Group Begin 1 3 7 7	1Grou End Begin 5 14 13 13 np Ld e Unit: KW KW	p 20 a End Be 14 Cal b Va coment Pa Exhau Fan	Heating P'y Lue Un rameter St At St 03	Groud Begind	ment Par Energy Rate Value 100 100	Group 5- Begin End Frameters Units PCTEFF PCTEFF Opt ust Ver	-Group Begin Seq Orde Numb	Swir over	itch			sc.	Dema Lim

Set	Cooling	Heating	Return	Exhaust	Auxiliary	Room	Optional
Number	Fan	Fan	Fan	Fan	Supply	Exhaust	Ventilation
6	EQ4003			E94003	oupp.,	Exiloust	ventitation
7	EQ4003						
8	EQ4003						
9	EQ4003						
10	EQ4003					-	
11	EQ4003						
12	EQ4003						
13	EQ4003			EQ4003			
14	EQ4003						

Card 70) 			Fan	Equip	oment K	W Over	rides				
		MAIN S				ER SYS					PRIORI	
System	Cool	Heat	Ret	Exh	Aux	Room	0pt				Room	Opt
Set	Fan	Fan	Fan	Fan	Sup	Exh	Vent	Cool	Heat	Aux	Exh	Vent
Number	KW	KW	KW	KW	KW	KW	KW	Fan	Fan	Fan	Fan	Fan
1	6.5				•	1.2	.25					
2	10.2			.652								
3	6.5			.415								
4	17.3			1.225								
5	13.9					2.7	.779					
6	7.4			.519								
7	3.3											
8	5.6											
9	1.8											
10	3.7											
11	4.7											
12	3.3											
13	5.6			.156								
14	22.7											

Card 71-			Base	Utility P	arameters				
Base	Base	Hourly	Hourly			Equip	Demand		
Utility	Utility	Demand	Demand	Schedule	Energy	Reference		Entering	Leaving
Number	Descrip	Value	Units	Code	Type	Number	Number	Temp	Temp
1	CHW PIPING LOSS	4.64	TONS	AVAIL	CHILL-LD	1			· cmp
2	HW PIPING LOSS	77.4	M8H	AVAIL 1	HOT-LD	1			

Card 7	4	 	Condenser	/ Coolin	g Tower	Parameters		 	
Tower Ref	Cooling Tower Code EQ5100	Capacity Units	Energy	Energy Consump Units KW		Tower Type	Number	Low Spd Energy	

rd 74 ower ef	Cooling Tower Code EQ5100	Capacity Value	Capacity Units	- Condenser Energy Consump Value 10.8	Energy Consump Units KW	Fluid Type T-WATER	Tower Type CTOWER	Of Cells	Percent Airflow Low Spd	Energy	Low Spd Energy Units	
		ā.			- Miscell	aneous Ac	cessory -		 #3			
ard Misc Ref	#1	Energy Value 16.6	Energy Units KW	# Sched E	2	Energy Value	Energy Units	Sched Code	#3 Equip Code	Energy Value	Energy Units	Sched Code

Card 19- Load Alternative -Number Description 4 ECO C -

ECO-C, LSTC BUILDING

								_			
Card 20	Zone Reference	Room	Floor Length	Genera Floor Width	Room Const	Paramete Plenum Height	Acoustic Ceiling	Floor Height	Duplicate Floors Multiplier	Duplicate Rooms per Zone	Perimeter Depth
Number	Number	Descrip	25.5	59.5	10	2		10			
5	1	B-17 B,C,& D	59	59.5	10	2		10			
10	2	B-17,18,AEROBICS	80.5	80.5	10	2		10			
15	3	B-8,16,27-32	22	15	10	2		10 10			
20	4	B-25,25A	27	27.5	10	2		10			
25	5	B-4	55.5	55.5	10	2		10			
30	6	B-12,12A B-2,13,19,20-22	45.5	45.5	10	2		10			
35	7	B-1,3,24	81	81	10	2		10			
40	8	B-9,10,11,11A	111.5	20	10	2		10			
45	9	DOMES, MAIN WINGS	40	40.5	10	2		10			
50	10	SW LOWER DOME	48	_ 48	10	2 2		10			
55	11 . 12	NE LOWER DOME	48	48	10	2		10			
- 60	13	MAIN FLR WEST	89.5	37	10	. 2		10			
65	14	MAIN FLR EAST	61	61	10 10	. 2		10			
70 75	15	112,119A,123A,	94.5	95 [^]	10	2		10			
80	16	MAIN FLOOR CENTR	93	93.5	10	2		10			
85	17	MAIN FLOOR SOUTH	51	51 47 E	10	2		10			
90	18	L.DOME COMP. RMS.	63.5	63.5 71	10	2		10			
95	19	L.DOME OFFICES	71	88.5	10	2		10			
100	20	U.DOME	88.5	ر.۵۵		_					
105	21	RM 119, AH-8	1	'							

Card 20				Gener	al Room	Paramete	rs				
	Zone						Acoustic	Floor to	Duplicate	Duplicate	Perimeter
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number	Number	Descrip	Length	Width	Type	Height	Resistance	Height	Multiplier	Zone	
110	22	RM 119A, AH-9	1	1							
115	23	RM 123, AH-10	1	1							
120	24	RM 127A, AH-11A	1	1							
125	25	RM 127A, AH-11B	1	1	•						
130	26	RM 127, AH-12	1	1							
135	27	AUX CNTRL, AH-14	1	1							
140	28	RM 110 UNDERFLOR	33	34	10	2		10			
145	29	RM 120A,122,126A	50	50	10	2		10			
150	30	RM 146A,148,148A	32	32	10	2		10			
155	31	204,205,206,207	63.5	63.5	10	2		10			

Card 21				Therm	ostat Param	eters				
	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating		Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location		
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	
5	75	50	75		70	70			HEAVY130	NO
10	75	50	75		70	70			HEAVY130	
15	7 5	50	75		70	70			HEAVY130	NO
20	75	50	75		70	70			HEAVY130	
25	75	50	75		70	70			HEAVY130	
30	75	50	75		70	70			HEAVY130	
35	75	50	75		70	70			HEAVY130	
40	75	50	75		70	70			HEAVY130	NO
45	70	45	70		70	70			HEAVY130	
50	7 5	50	75		70	70			HEAVY130	NO
55	7 5	50	75		70	70			HEAVY130	NO
60	75	50	75		70	70			HEAVY130	NO
65	75	50	75		70	70			HEAVY130	NO
70	75	50	75		70	70			HEAVY130	NO
7 5	75	50	7 5		70	70			HEAVY130	NO
180	70	45	70		7 0	70			HEAVY130	NO
85	75	50	7 5		70	70			HEAVY130	NO
90	70	45	70		70	70			HEAVY130	NO
95	75	50	75		70	70 .			HEAVY130) NO
100	75	50	75		70	70			HEAVY130) NO
105	70	45	70		70	70				
110	70	45	70		70	70 .				
115	70	45	70		70 -	70				
120	70	45	70		70	70				
125	70	45	70		70	70				
130	70	45	70		70	70				
135	70	45	70		70	70				
140	70	45	70		70	70				
145	70	45	70		70 .	70				
150	70	45	70		70	70				

Card 21				Therπ	ostat Param	neters				
,	Cooling	Room	Cooling	Cooling	Heating		Heating		Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room		T'stat		•	
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	
155	70	45	70		70	70 ·			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1 1001

Card 22				Roof Par	ameters				
		Roof							
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof	Roof	Roof
Number	Number	Floor?	Length	Width	U-Value		Direction		
50	1	YES			0.18	19			.4
100	1	NO	88	88	0.18	19			.4

				wattr	Wall				Ground
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance
Number	Number	Length	Height	U-Value	Type	Direction	Tilt		
50	1	26.5	31	0.18	94	0		.4	
50	2	26.5	31	0.18	94	90		.4	
50	3	26.5	31	0.18	94	180		.4	
50	4	26.5	31	0.18	94	270		.4	
55	1	42	15	0.18	94	0		.4	
55	2	42	15	0.18	94	90		.4	
55	3	42	15	0.18	94	180		.4	
5 5	4	42	15	0.18	94	270		.4	
60	1	42	15	0.18	94	0		.4	
60	2	42	15	0.18	94	90		.4	
60	3	42	15	0.18	94	180		.4	
60	4	42	15	0.18	94	270		.4	
90	1	37.5	10	0.18	94	0		.4	
90	2	37.5	10	0.18	94	90		.4	
90	3	37.5	10	0.18	94	180		.4	
90	4	37.5	10	0.18	94	270		.4	
95	1	47	10	0.18	94	0		.4	
95	2	47.5	10	0.18	94	90		.4	
. 95	3	47	10	0.18	94	180		.4	
95	4	47.5	10	0.18	94	270		.4	
100	1	78	29	0.18	94	0		.4	
100	2	78.5	29	0.18	94	90		.4	
100	3	78	29	0.18	94	180		.4	
100	4	78.5	29	0.18	94	270		.4	

Card 26		 	§	Schedules -	• • • • • • • • • • • • • • • • • • • •	 		••••••
Koom Number	People	Ventilation	Infiltration	Reheat	Cooling	Auxiliary	Room	Daylighting Controls

a				S			Heating	Auxiliary	Room	Daylighting
Card 26	•••				Reheat	Cooling		Fan	Exhaust	Controls
Room Number	People	Lights	Ventilation	Infiltration	Minimum	Fans DAYSCHED	Fan	, an	_	
10		OFFICEL8				DAYSCHED			DAYSCHE)
15	OFFICEP1	OFFICEL9				DAYSCHED				
20		OFICEL10				DAYSCHED				
25		OFICEL11				. DAYSCHED				
30	OFFICEP1	OFICEL12				DAYSCHED				
35	OFFICEP1	OFICEL13				DAYSCHED				
40		CLGONLY				DAYSCHED				
45	OFFICEP1	OFICEL14				DAYSCHED				
50	OFFICEP1					DAYSCHE				
55	OFFICEP1					DAYSCHE				
60	OFFICEP1	OFICEL16	•			DAYSCHE				
65	OFFICEP1	OFICEL17	,			DAYSCHE				
70	OFFICEP1	OFICEL18	3			DAYSCHE				
75	OFFICEP1	OFICEL19	9			DAYSCHE	D		DAYSCH	IED
80	OFFICEP1	OF I CEL 2	0			DAYSCHE	D			
85	OFFICEP'	1 OFICEL2	1			DAYSCHE	ED			
90	OFFICEP					DAYSCHE	ED			
95	OFFICEP					DAYSCH	ED			
100	OFFICEP	1 OFICEL2	23							
105	CLGONLY									
110	CLGONLY	'								
115	CLGONLY	1								
120	CLGONLY	1								
125	CLGONL'									
130	CLGONL	Y								
135	CLGONL									
140	CLGONL	Y								

							.	 		
Card 27	'				Peopl	e and Ligh	Lighting	 Percent	Daylig	hting Reference
Room Number 5 10 15 20 25 30 35 40 45 50	People Value 7 3 2	People Units PEOPLE PEOPLE PEOPLE PEOPLE	People Sensible 250 250 250 250	People Latent 200 200 200 200	Lighting Value 1876 3263 7204 375 2060 2683 1115 3683 4838 374	Units WATTS	Fixture Type ASHRAE1 SUSFLUOR SUSFLUOR SUSFLUOR SUSFLUOR ASHRAE1 ASHRAE1 ASHRAE1 ASHRAE1 ASHRAE1	Lights to Ret. Air	Reference Point 1	Reference Point 2
55 60 65	1 3 7	PEOPLE PEOPLE PEOPLE	250 250 250	200 200 200	2870 3024 5967	WATTS WATTS WATTS	ASHRAE1 ASHRAE1 SUSFLUO			

Room Number 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140	People Value 13 15 12 11 16 18 19 1 1 1 1 1 1	People Units PEOPLE	People Sensible 250 250 250 250 250 250 250 250 250 250		Lighting Value 3463 13978 11936 4403 5302 6382 9998	e and Ligh Lighting Units WATTS WATTS WATTS WATTS WATTS WATTS WATTS WATTS WATTS	Lighting Fixture Type ASHRAE1 ASHRAE1 ASHRAE1 ASHRAE1 ASHRAE1 ASHRAE1 ASHRAE1	Ballast Factor	Percent Lights to Ret. Air	Daylig Reference Point 1		
---	---	--	---	--	---	---	---	-------------------	----------------------------------	--------------------------------	--	--

0				Mis	cellaneous	Equipment					
Card 20				_	• • • • • • • • • • • • • • • • • • • •	Energy	Percent	Percent	Percent		
	Misc		Energy							Dadiant	Ontional
Room	Equipment	Equipment	Consump	Consump	Schedule`	Meter	of Load		Misc. Sens		
Number	Number	Descrip	Value	Units	Code	Code	Sensible	to Room	to Ret. Air	Fraction	Air Path
155	1	COMPUTERS - UPS	17545	WATTS	OFFICEM1	ELEC					

Card 29					Room Airflows					
cara cz		Ventil	ation			Infili	tration			
Room		ing	Hea	ting		ling		ting	Reheat	Minimum
Number		Units	Value	Units	Value	Units		Units	Value	Units
5	20	CFM-P	20	CFM-P						
10	20	CFM-P	20	CFM-P						
20	20	CFM-P	20	CFM-P						
25	20	CFM-P	20	CFM-P						
30	20	CFM-P	20	CFM-P						
35	20	CFM-P	20	CFM-P						
40	20	CFM-P	20	CFM-P						
45	20	CFM-P	20	CFM-P						
50	20	CFM-P	20	CFM-P						
55	20	CFM-P	20	CFM-P						
60	20	CFM-P	20	CFM-P						
65	20	CFM-P	20	CFM-P						
70	20	CFM-P	20	CFM-P						
75	20	CFM-P	20	CFM-P						
80	20	CFM-P	20	CFM-P						
85	20	CFM-P	20	CFM-P						
90	20	CFM-P	20	CFM-P						
95	20	CFM-P	20	CFM-P						
100	20	CFM-P	20	CFM-P						
135	20	CFM-P	20	CFM-P						

Card 30					- Fan Airflows								
		Ma	in		Auxiliary								
Room	Cool		Heat	ting	Coo	ling	Hea	ting	Room E	xhaust			
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units			
5	2675	CFM	2675	CFM						-			
10	3180	CFM	3180	CFM									
15	10917	CFM	10917	CFM					790	CFM			
20	700	CFM	700	CFM			•						
25	800	CFM	800	CFM		•							
30	3025	CFM	3025	CFM									
35	845	CFM	845	CFM									
40	17300	CFM	17300	CFM									
45	9060	CFM	9060	CFM									
50	1100	CFM	1100	CFM		_							
5 5	1570	CFM	1570	CFM		•							
60	1910	CFM	1910	CFM									

		Ma	in			Auxi	liary			
Room	Coo	ling	Hea	ting	Coo	ling	Hea	ting	Room E	xhaust-
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
65	2905	CFM	2905	CFM						
70	3075	CFM	3075	CFM						
75	6840	CFM	6840	CFM						
80	5952	CFM	5952	CFM			•		3769	CFM
85	2339	CFM	2339	CFM						
90	4268	CFM	4268	CFM						
95	3824	CFM	3824	CFM						
100	12518	CFM	12518	CFM						
105	8643	CFM	8643	CFM						
110	11962	CFM	11962	CFM						
115	4780	CFM	4780	CFM						
120	7526	CFM	7526	CFM	•					
125	7467	CFM	7467	CFM						
130	8800	CFM	8800	CFM						
135	11513	CFM	11513	CFM						
140	5409	CFM	5409	CFM						
145	10620	CFM	10620	CFM						
150	8893	CFM	8893	CFM						
155	23005	CFM	23005	CFM						

Card 31 Partition Parameters									
Room	Partition	Partition	Partition	Partition	Const	Temp	Cooling	Heating	Adjacent
Number	Number	Length	Height	U-Value	Type	Flag	Temp	Temp	Room No
5	1	43	43	.18	110	CONSTANT	63	63	
10	1	68.5	68.5	.18	110	CONSTANT	63	63	
15	1	92.5	93	.18	110	CONSTANT	63	63	
20	1	26.5	26.5	0.18	110	CONSTANT	63	63	
25	1	27.5	27	0.18	110	CONSTANT	63	63	
30	1	55.5	55.5	0.18	110	CONSTANT	63	63	
35	1	64	10	0.18	110	CONSTANT	63	63	
40	1	50	10	0.18	110	CONSTANT	63	63	
45	1	111.5	10	0.18	110	CONSTANT	63	63	
60	1	45	45	0.18	110	CONSTANT	63	63	
65	1	89.5	37	0.18	110	CONSTANT	71	55	
70	1	89.5	37	0.18	110	CONSTANT	71 -	55	
75	1	87	87	0.18	110	CONSTANT	71	55	
85	1	60	60	0.18	110	CONSTANT	71	55	

------ System Section Alternative #4 ------

Card 39- System Alternative Number Description

1 EXISTING SECONDARY EQUIPMENT AND SYSTEMS

Card 40)		Syste	m Type			
					ATION SYST		
System		Ventil					Fan
Set	System	Deck	Cooling	Heating	Cooling	Heating	Static
Number	Type	Location	SADBVh	SADBVh	Schedule	Schedule	Pressure
1	BPMZ						
2	BPMZ						
3	TRH						
4	TRH						
5	TRH				,		
6	BPMZ						
7	COMP						
8	COMP						
9	COMP						
10	COMP						
11	COMP						
12	COMP						
13	COMP						
14	TRH						

Set Number	Ref	#1	Ref	#2	Ref	#3	Ref	#4	Ref	#5	Ref	#6
Number	Begin	End										
1	1	3							•		5	
2	4	8										
3	9	9										
4	10	15										
5	16	19										
6	20	20										
7	21	21										
8 .	22	22										
9	23	23						*				
10	24	24										
11	25	25										
12	26	26				Υ.						
13	27	27										
14	28	31										

Card 42				Fan	SP ar	nd Duct P	arameters				
System Set	Cool Fan	Heat Fan	Return Fan	Mn Exh	Aux Fan	Rm Exh Fan	Cool Fan Mtr	Return Fan Mtr	Supply Duct	Supply Duct	Return Air
1	1.75	3r	3F	.127 .326		1.0	Loc	Loc	Ht Gn	Loc	Path
3	2.4			.208							

system Set	COOL	neat	Keturn	Mn Exh	Aux	Rm Exh	Cool	Return	Supply		Return
Number	Fan SP	Fan	Fan	Fan	Fan	Fan	Fan Mtr	Fan Mtr	Duct	Duct	Air
4	2.5	SP	SP	SP .613	SP	SP	Loc	Loc	Ht Gn	Loc	Path
5	3.45			.389		1.5					
6	2.1			.26							
7	0.92										
8	1.67										
9	0.64										
10	1.39										
11	1.54										
12	1.04										
13	1.64			.077							
14	3.25										

ystem	Econ	Econ	Max Pct	Direct	Indirect	1st Stage	your opt	ions					
et	Type	0n	Outside	Evap	Evap	Evap	Fan	544	Ех	naust Air H	eat Recov	ery	
lumber	Flag	Point	Air	Cooling	•			Effectiv	eness	Control	Type	Exh-Side	Deck -
	DRY-BULB		3	obot mg	cooting	Cooling	Cycling	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage
	DRY-BULB	65	5.5										
	DRY-BULB	65	8.8										
	DRY-BULB	65	14										
	DRY-BULB	65	9										
	DRY-BULB	65	8										
	DRY-BULB	65	2.4										

Set Number 1 2 3	Cooling Coil AVAIL AVAIL AVAIL	Economizer AVAIL AVAIL AVAIL AVAIL	Direct Evap	Indirect Evap Coil	Auxiliary Cooling Coil	Main Heating Coil OFF OFF	Main Preheat Coil OFF OFF	Reheat Coil OFF	Mech. Humidity	Auxiliar Heating Coil
5	AVAIL	AVAIL								*
5	AVAIL	AVAIL				OFF	OFF			
13	AVAIL	AVAIL				0 1.	OFF	OFF		

Card 46				- FMS/RAS	Schedules -				
Set	Control	Purge	Start Schedule	Optimum Stop	On Period Schedule	TY CYCLIN	G	System HR	Room HR

Card 46----- EMS/BAS Schedules ------

alu					Ontin				DI 13	LA CACITM	C	Cuntom UD	Poom HP				
	m Dis		Nigh				ptimum					System HR					
t	Cor	ntrol	Purg	ge	Start	t S	top	On Pe	eriod	Pattern	Maximum	Exhaust	Exhaust				
mbe	r Sch	hedul e	Sche	edul e	Sched	dule S	chedule	Sched	dule	Length	Off Time	Schedule	Schedule	;			
					OPSTA	ART C	PSTOP										
					OPST/	ART C	PSTOP										
					OPST/	ART C	PSTOP										
					OPST	ART C	PSTOP			•							
					OPST/	ART C	PSTOP										
						Rm Ext		verrid Vnt				OLING FAN-					
-	_	Fan F				Fan	•	Fan Me		Air		Size					
													Confa				
um	eif l	Eff E		11	Eff	C I I	Eff	E.	ff	Value	Units	Meth	Confg BLOW				
													BLOW				
													BLOW				
4													BLOW				
+													DEUW				
											chedules -						
ard Iter	59	Ele re Tin	ec Con	sump (Elec	Ed Demand	quipment Demand Limit	: Descr i V Alte	iption		chedules			emand L Temp	imit perature Orift	•	
ard lter	59 rnativ	Ele re Tin Sch	ec Con ne of nedule	sump Day	Elec Time Sched	Ed Demand of Day Jule	quipment Demand Limit Max KV	: Descr i V Alte EXIS	iption ernativ	/ TOD So e Descrip RIMARY EC	chedules otion QUIPMENT		D	emand L Temp le f	imit perature Drift		
ard Iter Tumbe	59 rnativ er 60	Ele ve Tin Sch	ec Conne of	sump	Elec Time Sched	Ed Demand of Day Jule	quipment Demand Limit Max KV	: Descr i V Alte EXIS	iption ernativ	/ TOD So e Descrip RIMARY EC	chedules otion QUIPMENT		D	emand L Temp le f	imit perature Drift		
ard (ter umbe	59 rnativ er 60 All	Ele ve Tin Sch	ec Conne of nedule	sump	Elec Time Sched	Ed Demand of Day Jule	quipment Demanc Limit Max KV	: Descr d N Alte EXIS	iption ernativ STING P	/ TOD So e Descrip RIMARY EC	chedules cotion auIPMENT signment		Schedu	emand L Temp le f	imit perature Drift		
ard lter umbe ard oad sgn	59 rnativer 60 All Load	Ele ye Tin Sch Coil	ec Conne of nedule Cooli	sump (Elec Time Sched	Ed Demand of Day Jule	quipment Demand Limit Max KV	: Descr d N Alte EXIS	iption ernative ETING P Cooling	P Descrip RIMARY EC Load Ass	chedules cotion QUIPMENT signment	5Grou	Do Schedu p 6Gr	emand L Temp le f	imit perature prift	8Gro	up 9
ard lter umbe ard oad sgn ef	59 rnativ er 60 All Load	Ele ve Tin Sch	ec Con ne of nedule Cooli Equip Sizin	sump (Day :	Elec Time Sched	Ed Demand of Day Jule up 1- n End	quipment Demand Limit Max KV	: Descr d N Alte EXIS	iption ernative ETING P Cooling	P Descrip RIMARY EC Load Ass	chedules cotion QUIPMENT signment		Do Schedu p 6Gr	emand L Temp le f	imit perature prift	8Gro	up 9
ard lter umbe ard oad sgn ef	59 rnativ er 60 All Load Cool	Ele ye Tin Sch Coil	ec Conne of nedule Cooli	sump (Day :	Elec Time Sched	Ed Demand of Day Jule up 1- n End	quipment Demand Limit Max KV	: Descr d N Alte EXIS	iption ernative ETING P Cooling	P Descrip RIMARY EC Load Ass	chedules cotion QUIPMENT signment	5Grou	Do Schedu p 6Gr	emand L Temp le f	imit perature prift	8Gro	up 9
ard lter umbe ard oad sgn ef	59 rnativ er 60 All Load	Ele ye Tin Sch Coil	ec Con ne of nedule Cooli Equip Sizin	sump (Day :	Elec Time Sched	Ed Demand of Day Jule up 1- n End	quipment Demand Limit Max KV	: Descr d N Alte EXIS	iption ernative ETING P Cooling	P Descrip RIMARY EC Load Ass	chedules cotion QUIPMENT signment	5Grou	Do Schedu p 6Gr	emand L Temp le f	imit perature prift	8Gro	up 9
ard lter umbe ard oad sgn ef	59 rnativ er 60 All Load	Ele ye Tin Sch Coil	ec Con ne of nedule Cooli Equip Sizin	sump (Day :	Elec Time Sched	Ed Demand of Day Jule up 1- n End	quipment Demand Limit Max KV	: Descr d N Alte EXIS	iption ernative ETING P Cooling	P Descrip RIMARY EC Load Ass	chedules cotion QUIPMENT signment	5Grou	Do Schedu p 6Gr	emand L Temp le f	imit perature prift	8Gro	up 9
ard lter umbe ard oad sgn ef	59 rnativer 60 All Load Cool	Ele ve Tin Sch Coil ds To	ec Conne of nedule Cooli Equip Sizin PKPLA	sump ! Day ng ment ag	Elec : Time Sched	Ed Demand of Day Jule up 1- n End	quipment Demand Limit Max Ku	: Descr d V Alte EXIS C	iption ernative ETING P Cooling coup 3-	e Descrip RIMARY Ed Load Ass -Group Begin 1	chedules cotion CUIPMENT signment 4Grou	o 5Grou End Begin	Schedu Schedu p 6Gr	emand L Temple 1 le 1 oup 7- in End	imit perature Drift -Group Begin !	8Gro	up 9
ard lter umbe ard oad oad sgn ef	59 rnativer 60 All Load Cool 1	Ele ve Tin Sch Coil ds To L Ref	ec Conne of nedule Cooli Equip Sizin PKPLA	sump Day ng ment ng	-Grou Begin	Demand of Day lule	Quipment Demanc Limit Max Ku Group	: Descr d V Alte EXIS C 2Gr nd Beg	iption crnative cooling coup 3- gin End	e Descrip RIMARY EC Load Ass -Group Begin 1	chedules cotion CUIPMENT signment 4Group End Begin	o 5Grou End Begin	Schedu Schedu p 6Gr	emand L Temple 1 le 1	imit perature Drift -Group Begin !	8Gro End Begi	up 9
ard lter umbe ard oad sgn ef	59 rnativer 60 All Load Cool 1	Ele ye Tin Sch Coil ds To L Ref	c Conne of nedule Cooli Equip Sizin PKPLA	sump Day Day	Elec Time Sched	Demand of Day dule	quipment Demanc Limit Max KV	: Descr d V Alte EXIS C 2Gr nd Beg	iption ernativ ETING P Cooling roup 3- gin End	e Descrip RIMARY Ed Load Ass -Group Begin 1	chedules cotion CUIPMENT signment 4Group End Begin ametersHEAT RE	o 5Grou End Begin	Schedu Schedu p 6Gr End Beg	emand L Temple 1 Oup 7- in End	orift -Group Begin I	8Gro End Begi	up 9
ard liter lumbe card load lsgn lcard Cool	59 rnativer 60 All Load Cool 1 62 Equip	Ele ye Tin Sch Coil ds To L Ref	cooli Equip Sizin PKPLA	sump Day ng ment ig NT Cap	Elec Time Sched	Demand of Day lule up 1- n End 14	quipment Demanc Limit Max KV Group G Begin E	: Descri	iption ernative ernat	e Descrip RIMARY EC Load Ass Group Begin I	chedules cotion coulpment signment 4Group End Begin ametersHEAT RE city	o 5Grou End Begin COVERY	Schedu Schedu p 6Gr End Beg	emand L Temple 1 Oup 7- in End Seq Order	-Group Begin I	8Gro End Begi Demand Limit	up 9.
Card Card Card Segn Cool Ref Num	59 rnativer 60 All Load Cool 1 62 Equip Code Name	Ele ye Tin Sch Coil ds To L Ref	cooli Cooli Equip Sizin PKPLA	sump Day ng ment ng MT Value	Elec Time Sched	Demand of Day lule up 1- n End 14	quipment Demanc Limit Max KV Group G Begin E	: Descri	iption ernative ernat	e Descrip RIMARY EC Load Ass Group Begin 1	chedules cotion aUIPMENT signment 4Group End Begin ammetersHEAT RE city Units	o 5Grou End Begin COVERY Energ Value	Schedu Schedu p 6Gr End Beg	emand L Temple E Outp 7- in End Seq Order Num	-Group Begin I	8Gro End Begi	up 9.
Card Card Load Asgn Ref Cool	59 rnativer 60 All Load Cool 1 62 Equip Code Name	Coil ds To	cooli Equip Sizin PKPLA	sump Day ng ment ig NT Cap	Elec Time Sched	Demand of Day lule up 1- n End 14 cool	quipment Demanc Limit Max KV Group G Begin E	: Descri	iption ernative ernat	e Descrip RIMARY EC Load Ass Group Begin I	chedules cotion coulpment signment 4Group End Begin ametersHEAT RE city	covery Covery Value 88	Schedu Schedu p 6Gr End Beg	emand L Temple 1 Oup 7- in End Seq Order	-Group Begin I	8Gro End Begi Demand Limit	up 9

Card	1 63			Cooling Pu	mps and Ref	erences				
Cool	CHILLED	WATER	CONDE	NSER	HT REC	or AUX	Switch-			
Ref	Full Load	Full Load	Full Load	Full Load	Full Load	Full Load	over	Cold	Cooling	Misc.
Num	Value	Units	Value	Units	Value	Units	Control	Storage	Tower	Access.
1	39.3	KW	27.5	KW					1	1
2	0	KW	18.3	KW					2	

Card	64			Cooli	ng Equip	ment Optic	ns			
Cool	Max	Load		Free		Cond	Cond	Cond Rej	Cond Rej	Cond Rej
Ref	CW	Shed	Evap	Cooling	Heat	Entering	Min Oper	To Ref	To Ref	ани
Num	Reset	Economizer	Precool	Type	Source	Тетр	Temp	Type	Number	Temp
1						85	65	HEATING	1	95
2					,	85	65	HEATING	2	95

Card 67	'				Неа	iting Equ	ipment Pa	rameters -						
Heat	Equip	Number	HW Pmp				Energy		Seq	Switch				Demand
Ref	Code	Of	Full Ld		Cap'y		Rate		Order	over	Hot	Misc.		Limit
Number	Name	Units	Value	Units	Value	Units	Value	Units	Number	Control	Strg	Acc.	Cogen	Number
1	EQ2002	1	0	KW			100	PCTEFF						
2	EQ2002	1	0	KW			100	PCTEFF						
3	EQ2263	1												

Card 69	• • • • • • • • • • • • • • • • • • • •	•••••	Fan Equip	ment Paramo	eters		
Set	Cooling	Heating	Return	Exhaust	Auxiliary	Room	Optional
Number	Fan	Fan	Fan	Fan	Supply	Exhaust	Ventilation
1	EQ4003			EQ4223		EQ4003	
2	EQ4003			EQ4223		,	
3	EQ4003			EQ4223	•		
4	EQ4003			EQ4223			
5	EQ4003			EQ4223		EQ4003	
6	EQ4003			EQ4223			
7	EQ4003						
8	EQ4003						
9	EQ4003				•		
10	EQ4003						
11	EQ4003						
12	EQ4003						
13	EQ4003			EQ4223			

Card 69			Fan Equipm	ent Parame	ters		
System							
Set	Cooling	Heating	Return	Exhaust	Auxiliary	Room	Optional
Number 14	Fan EQ4003	Fan	Fan	Fan	Supply	Exhaust	Ventilation

Card 70)			Fan	Equip	oment K	W Over	rides					
System	Cool	Heat	Ret	Exh	Aux	Room	0pt				Room	0pt	
Set	Fan	Fan	Fan	Fan	Sup	Exh	Vent	Cool	Heat	Aux	Exh	Vent	
Number	KW	KW	KW	KW	KW	KW	KW	Fan	Fan	Fan	Fan	Fan	
1	6.5			.25		1.2							
2	10.2			.652									
3	6.5			.415									
4	17.3			1.225									
5	13.9			.779		2.7							
6	7.4			.519									
7	3.3												
8	5.6												
9	1.8												
10	3.7												
11	4.7												
12	3.3												
13	5.6			.156									
14	22.7												

Card 71			Base	Utility P	arameters				
Base	Base	Hourly	Hourly			Equip	Demand		
Utility	Utility	Demand	Demand	Schedule	Energy	Reference	Limiting	Entering	Leaving
Number	Descrip	Value	Units	Code	Type	Number	Number	Temp	Тетр
1	CHW PIPING LOSS	4.64	TONS	AVAIL	CHILL-LD	1			·
2	HW PIPING LOSS	77.4	MBH	AVAIL	HOT-LD	1			

Card 7	' 4			Condenser	/_Coolin	g Tower Pa	rameters				
	Cooling			Energy	Energy			Number	Percent.	Low Spd	Low Spd
Tower	Tower	Capacity	Capacity	Consump	Consump	Fluid	Tower	Of	Airflow	Energy	Energy
Ref	Code	Value	Units	Value	Units	Type -	Type	Cells	Low Spd	Value	Units
1	EQ5100			12.5	KW	T-WATER	CTOWER	1			
2	EQ5100			10.8	K₩	T-WATER	CTOWER	1			

Card	75				Misc	ellaneous A	ccessory			•		
	#1		•		#2	•	•		#3			
Misc	Equip	Energy	Energy	Sched	Equip	Energy	Energy	Sched	Equip	Energy	Energy	Sched
Ref	Code	Value	Units	Code	Code	Value	Units	Code	Code	Value	Units	Code
1	EQ5020	16.6	KW	DAYSCHED								

01 Card - Job Information

Project: EEAP ENERGY STUDY - HELSTF

Location: WHITE SANDS - ALAMOGORDO, NEW MEXICO

Client: FORT WORTH CORPS OF ENGINEERS Program User: HUITT-ZOLLARS, INC.

Comments: LSTC BUILDING

Weather Clearness Clearness Design Design Design Building Ground Ground Code Number Number Dry Bulb Wet Bulb Dry Bulb Orientation Reflect Reflect

HOLLOMAN

----- Load Section Alternative #1 -----

ECO-D, LSTC BUILDING

Card 19- Load Alternative -

Number

Description

1

ECO D - VAV RETROFIT

Card 20)			Gener	al Room	Paramete	ers				
	Zone						Acoustic	Floor to	Duplicate	Duplicate	Perimeter
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number	Number	Descrip	Length	Width	Type	Height	Resistance	Height	Multiplier	Zone	
5	1	B-17 B,C,& D	25.5	59.5	10	2		10			
10	2	B-17,18,AEROBICS	59	59.5	10	2		10			
15	3	B-8,16,27-32	80.5	80.5	10	2		10			
20	4	B-25,25A	22	15	10	2		10			
25	5	B-4	27	27.5	10	2		10			
30	6	B-12,12A	55.5	55.5	10	2		10			
35	7	B-2,13,19,20-22	45.5	45.5	10	2		10			
40	8	B-1,3,24	81	81	10	2		10			
45	9	B-9,10,11,11A	111.5	20	10	2		10			
50	10	DOMES, MAIN WINGS	40	40.5	10	2	~	10			~
55	11	SW LOWER DOME	48	48	10	2		10			*
60	12	NE LOWER DOME	48	48	10	2		10			
65	13	MAIN FLR WEST	89.5	37	10	2		10			
70	14	MAIN FLR EAST	61	61	10	2		10			
75	15	112,119A,123A,	94.5	95	10	2		10			
80	16	MAIN FLOOR CENTR	93	93.5	10	2		10			
85	17	MAIN FLOOR SOUTH	51	51	10	2		10			

Card 20			·	Genera	al Room	Paramete	rs				
	Zone						Acoustic	Floor to	Duplicate	Duplicate	Perimeter
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number	Number	Descrip	Length	Width	Type	Height	Resistance	Height	Multiplier	Zone	
90	18	L.DOME COMP. RMS.	63.5	63.5	10	2		10			
95	19	L.DOME OFFICES	71	71	10	2		10			
100	20	U.DOME	88.5	88.5	10	2		10			
105	21	RM 119, AH-8	1	1	•						
110	22	RM 119A, AH-9	1	1							
115	23	RM 123, AH-10	1	1							
120	24	RM 127A, AH-11A	1	1							
125	25	RM 127A, AH-11B	1	1							
130	26	RM 127, AH-12	1	1							
135	27	AUX CNTRL, AH-14	1	1							
140	28	RM 110 UNDERFLOR	33	34	10	2		10			
145	29	RM 120A,122,126A	50	50	10	2		10			
150	3 0	RM 146A,148,148A	32	32	10	2		10			
155	31	204,205,206,207	63.5	63.5	10	2		ុ10			

	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location	No. Hrs	0n
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	
5	75	50	75		70	70			HEAVY130	NO
10	75	50	75		70	70			HEAVY130	NO
15	75	50	75		70	70			HEAVY130	NO
20	75	50	75		70	70			HEAVY130	NO
25	75	50	75		70	70			HEAVY130	NO
30	75	50	75		70	70			HEAVY130	NO
35	75	50	75		70	70			HEAVY130	NO
40	7 5	50	75		70	7 0			HEAVY130	NO
45	70	45	70		70	70			HEAVY130	NO
50	75	50	75		70	70			HEAVY130	NO
55	75	50	75		70	7 0			HEAVY130	NO
60	75	50	75		70	70			HEAVY130	NO
65	75	50	75		70	70			HEAVY130	NO
70	75	50	75		70	70			HEAVY130	NO
75	75	50	75		70	70			HEAVY130	NO
80	70	45	70		70	70			HEAVY130	NO
85	75	50	75		70	70 ′			HEAVY130	NO
90	70	45	70		70	70 -			HEAVY130	NO
95	75	50	75		70	70			HEAVY130) NO
100	75	50	75		70	70			HEAVY130) NO
105	70	45	70		70	70				
110	70	45	70		70	70				
115	70	45	70		70	70				
120	70	45	70		70	70				
125	70 ,.	45	70		70	70				
130	70	45	70		70	70				

Card 21				Therm	ostat Param	eters				
	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location	No. Hrs	0n
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor
135	70	45	70		70	70				
140	70	45	70		70	70				
145	70	45	70		70	70				
150	70	45	70		70	70 '				
155	70	45	70		70	70				

Card 22	·			Roof Par	ameters				
		Roof							
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof	Roof	Roof
Number	Number	Floor?	Length	Width	U-Value	Type	Direction	Tilt	Alpha
50	1	YES			0.18	19			.4
100	1	NO	88	88	0.18	19			-4

					Wall				Ground	
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance	
Number	Number	Length	Height	U-Value	Type	Direction	Tilt	Alpha	Multiplier	
50	1	26.5	31	0.18	94	0		.4		
50	2	26.5	31	0.18	94	90		.4		
50	3	26.5	31	0.18	94	180		.4		
50	4	26.5	31	0.18	94	270		.4		
5	1	42	15	0.18	94	0		.4		
5	2	42	15	0.18	94	90		.4		
5	3	42	15	0.18	94	180		.4		
5	4	42	15	0.18	94	270		.4		
0	1	42	15	0.18	94	0		.4		
0	2	42	15	0.18	94	90		.4		
0	3	42	15	0.18	94	180		.4		
0	4	42	15	0.18	94	270		.4		
0	1	37.5	10	0.18	94	0		.4		
0	2	37.5	10	0.18	94	90		.4		
0 -	3	37.5	10	0.18	94	180		.4		
0	4	37.5	10	0.18	94	270		.4		
5	1	47	10	0.18	94	0		.4		٠
5	2	47.5	10	0.18	94	90	. <u>.</u>	.4		
95	3	47	10	0.18	94	180		.4		
5	4	47.5	10	0.18	94	270		.4		
00	1	78	29	0.18	94	0		.4		
00	2	78.5	29	0.18	94	90		-4		
100	3	78	29	0.18	94	180		-4		
100	4	78.5	29	0.18	94	270		.4		

Card 26	,			S	ichedules					
Room					Reheat	Cooling	Heating	Auxiliary	Room	Daylighting
Number	People	Lights	Ventilation	Infiltration	Minimum	Fans	Fan	Fan	Exhaust	Controls
5	OFFICEP1	OFFICEL7				DAYSCHED				
10	OFFICEP1	OFFICEL8				DAYSCHED				
15	OFFICEP1	OFFICEL9				DAYSCHED			DAYSCHED	1
20		OFICEL10				DAYSCHED				
25		OFICEL11				DAYSCHED				
30	OFFICEP1	OFICEL12				DAYSCHED				
35	OFFICEP1	OFICEL13				DAYSCHED				
40		CLGONLY				DAYSCHED				
45	OFFICEP1	OFICEL14				DAYSCHED				
50	OFFICEP1	CLGONLY				DAYSCHED				
55	OFFICEP1	OFICEL15				DAYSCHED				
60	OFFICEP1	OFICEL16				DAYSCHED				
65	OFFICEP1	OFICEL17				DAYSCHED				
70	OFFICEP1	OFICEL18				DAYSCHED				
75	OFFICEP1	OFICEL19				DAYSCHED				
80	OFFICEP1	OFICEL20				DAYSCHED			DAYSCHED)
85	OFFICEP1	OFICEL21				DAYSCHED				
90	OFFICEP1	OFFICEL7				DAYSCHED				
95	OFFICEP1	OFICEL22	•			DAYSCHED				
100	OFFICEP1	OFICEL23				DAYSCHED				
105	CLGONLY									
110	CLGONLY									
115	CLGONLY									
120	CLGONLY									
125	CLGONLY									
130	CLGONLY									
135	CLGONLY									
140	CLGONLY									

Card 27	'				Peopl	e and Ligh	ts				
							Lighting		Percent	Daylig	hting
Room	People	People	People	People	Lighting	Lighting	Fixture	Ballast	Lights to	Reference	Reference
Number	Value	Units	Sensible	Latent	Value	Units	Type	Factor	Ret. Air	Point 1	Point 2
5	7	PEOPLE	250	200	1876	WATTS	ASHRAE1				
10	3	PEOPLE	250	200	3263	WATTS	SUSFLUOR				
15	2	PEOPLE	250	200	7204	WATTS	SUSFLUOR				-
20					375 '	WATTS	SUSFLUOR				
25					2060	WATTS	SUSFLUOR				
30	2	PEOPLE	250	200	2683	WATTS	ASHRAE1				
35					1115	WATTS	ASHRAE1				
40					3683	WATTS	ASHRAE1				
45	3	PEOPLE	250	200	4838	WATTS	ASHRAE1				
50	1	PEOPLE	250	200	374	WATTS	ASHRAE1				
55	1	PEOPLE	250	200	2870	WATTS	ASHRAE1				
60	3 ,.	PEOPLE	250	200	3024	WATTS	ASHRAE1			••	
65	7	PEOPLE	250	200	5967	WATTS	SUSFLUOR				
70	13	PEOPLE	250	200	3463	WATTS	ASHRAE1				
75	15	PEOPLE	250	200	13978	WATTS	ASHRAE1				

Card 27	' 				Peopl	e and Ligh	its				
							Lighting		Percent	Daylig	hting
Room	People	People	People	People	Lighting	Lighting	Fixture	Ballast	Lights to	Reference	Reference
Number	Value	Units	Sensible	Latent	Value	Units	Type	Factor	Ret. Air	Point 1	Point 2
80	12	PEOPLE	250	200	11936	WATTS	ASHRAE1				
85	11	PEOPLE	250	200	4403	WATTS	ASHRAE1				
90	16	PEOPLE	250	200	5302	WATTS	ASHRAE1			:	
9 5	18	PEOPLE	250	200	6382	WATTS	ASHRAE1				
100	19	PEOPLE	250	200	9998	WATTS	ASHRAE1				
105	1	PEOPLE	250	200							
110	1	PEOPLE	250	200							
115	1	PEOPLE	250	200							
120	1	PEOPLE	250	200							
125	1	PEOPLE	250	200							
130	1	PEOPLE	250	200							
135	4	PEOPLE	250	200							
140	1	PEOPLE	250	200							

Card 28											
	Misc	*	Energy	Energy		Energy	Percent	Percent	Percent		
Room	Equipment	Equipment	Consump	Consump	Schedule	Meter	of Load	Misc. Load		Radiant	Optional
łumber	Number	Descrip	Value	Units	Code	Code	Sensible	to Room	to Ret. Air	Fraction	Air Path
5	1	TYP. OFFICE EQ.	8500	WATTS	OFFICEL1						
10	1	TYP. OFFICE EQ.	1430	WATTS	OFFICEL1						
15	1	TYP. OFFICE EQ.	13814	WATTS	CLGONLY						
20	1	ELEV. MOTOR	6230	WATTS	CLGONLY						
30	1	OFFICE, LIGHT EQ	4636	WATTS	OFFICEL1						
40	1	MISC. EQ.	13132	WATTS	CLGONLY						
45	1	TYP OFFICE EQ	4250	WATTS	OFFICEL1						
55	1	TYP OFFICE EQ	830	WATTS	OFFICEL1						
60	1	TYP OFFICE EQ	7140	WATTS	OFFICEL1						
65	1	TYP OFFICE EQ	9040	WATTS	OFFICEL1						
70	1	TYP OFFICE EQ	12445	WATTS	OFFICEL1						
85	1	TYP OFFICE EQ	9220	WATTS	OFFICEL1						
90	1	TYP OFFICE EQ	4980	WATTS	CLGONLY						
95	1	TYP OFFICE EQ	23580	WATTS	OFFICEL1						
100	1	MISC. OFFICE EQ	32541	WATTS	OFFICEL2						
105	1	COMPUTERS - UPS	5995	WATTS	OFFICEM1	ELEC					
110	1	COMPUTERS - UPS	7194	WATTS	OFFICEM1	ELEC	-	•			
115	1	COMPUTERS - UPS	4700	WATTS	OFFICEM1	ELEC	٠				
120	1	COMPUTERS - UPS	3561	WATTS	OFFICEM1	ELEC					
125	1	COMPUTERS - UPS	3561	WATTS	OFFICEM1	ELEC					
130	1	COMPUTERS - UPS	7320	WATTS	OFFICEM1	ELEC					
135	1	COMPUTERS - UPS	2214	WATTS	OFFICEM1	ELEC					
140	1	COMPUTERS - UPS	4892	WATTS	OFFICEM1	ELEC					
145	1	COMPUTERS - UPS	10978	WATTS	OFFICEM1	ELEC					
150	1	COMPUTERS - UPS	4434	WATTS	OFFICEM1	ELEC					
155	1 ,.	COMPUTERS - UPS	17545	WATTS	OFFICEM1	ELEC					

Card 29					Room Air	flows		• • • • • • • • • • • • • • • • • • • •		
		Venti	lation			Infil	tration			
Room	Coo	ling	Hea	ting	Coo	ling	Неа	ting	Reheat	Minimum
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
5	20	CFM-P	20	CFM-P						
10	20	CFM-P	20	CFM-P						
20	20	CFM-P	20	CFM-P						
25	20	CFM-P	20	CFM-P		•				
30	20	CFM-P	20	CFM-P						
35	20	CFM-P	20	CFM-P						
40	20	CFM-P	20	CFM-P						
45	20	CFM-P	20	CFM-P						
50	20	CFM-P	20	CFM-P						
55	20	CFM-P	20	CFM-P						
60	20	CFM-P	20	CFM-P						
65	20	CFM-P	20	CFM-P						
70	20	CFM-P	20	CFM-P						
75	20	CFM-P	20	CFM-P						
80	20	CFM-P	20	CFM-P						
85	20	CFM-P	20	CFM-P						
90	20	CFM-P	20	CFM-P						
95	20	CFM-P	20	CFM-P						
100	20	CFM-P	20	CFM-P						
135	20	CFM-P	20	CFM-P						

Card 30					Fan Airflo	ows				
		Ma	in			Auxi	liary			
Room	Coo	ling	Hea	ting	Coo	ling	Hea	ting	Room E	xhaust
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
15									790	CFM
80									3769	CFM
105	8643	CFM	8643	CFM				-		
110	11962	CFM	11962	CFM						
115	4780	CFM	4780	CFM						
120	7526	CFM	7526	CFM						
125	7467	CFM	7467	CFM						
130	8800	CFM	8800	CFM						
135	11513	CFM	11513	CFM				_		

Card 31			Part	ition Param	eters -				
Room	Partition	Partition	Partition	Partition	Const	Temp	Cooling	Heating	Adjacent
Number	Number	Length	Height	U-Value	Type	Flag	Тетр	Temp	Room No
5	1	43	43	.18	110	CONSTANT	63	63	
10	1	68.5	68.5	.18	110	CONSTANT	63	63	
15	1	92.5	93	.18	110	CONSTANT	63	63	
20	1 ,	26.5	26.5	0.18	110	CONSTANT	63	63	
25	1	27.5	27	0.18	110	CONSTANT	63	63	
30	1	55.5	55.5	0.18	110	CONSTANT	63	63	

Card 31			Part	ition Param	eters -				
Room	Partition	Partition	Partition	Partition	Const	Temp	Cooling	Heating	Adjacent
Number	Number	Length	Height	U-Value	Type	Flag	, Temp	Temp	Room No
35	1	64	10	0.18	110	CONSTANT	63	63	
40	1	50	10	0.18	110	CONSTANT	63	63	
45	1	111.5	10	0.18	110	CONSTANT	63	63	
60	1	45	45	0.18	110	CONSTANT	63	63	
65	1	89.5	37	0.18	110	CONSTANT	71	55	
70	1	89.5	37	0.18	110	CONSTANT	71	55	
75	1	87	87	0.18	110	CONSTANT	71	55	
85	1	60	60	0.18	110	CONSTANT	71	55	

----- System Section Alternative #1 ------

Card 39- System Alternative Description

Number

EXISTING SECONDARY EQUIPMENT AND SYSTEMS

Card 40			Syste	т Туре			
			OPTION	AL VENTIL	ATION SYST	EM	
System		Ventil					Fan
Set	System	Deck	Cooling	Heating	Cooling	Heating	Static
Number	Туре	Location	SADBVh	SADBVh	Schedule	Schedule	Pressure
1	BPMZ						
2	BPMZ						
3	VRH						
4	VRH						
5	VRH						
6	BPMZ						
7	COMP						
8	COMP						
9	COMP						
10	COMP						
11	COMP						
12	COMP						
13	COMP	-					•
14	VRH					•	

Card 41					Zone A	ssignmer	nt					
System	Ref	ш4	Ref	#2	Ref	#7	Ref	#4	Ref	#5	Ref	#6
Set Number	Ref Begin	#1 End	Begin	#4 End	Begin	End	Begin	End	Begin	End	Begin	End
1	1	3										٠.
2	4	8										

Card 41					Zone A	ssignme	nt					
System												
Set	Ref	#1	Ref	#2	Ref	#3	, Ref	#4	Ref	#5	Ref	#6
Number	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End
3	9	9										
4	10	15										
5	16	19										
6	20	20	1				•					
7	21	21										
8	22	22										
9	23	23										
10	24	24										
11	25	25										
12	26	26										
13	27	27										
14	28	31										

				Mn Exh			Cool	Return		Supply	Return
Set	Fan	Fan	Fan	Fan	Fan	Fan		Fan Mtr	Duct	Duct	Air
Number	SP	SP	SP	SP	SP	SP	Loc	Loc	Ht Gn	Loc	Path
1	1.75			.127		1.0					
2	1.5			.326							
3	2.4			.208							
4	2.5			.613							
5	3.45			.389		1.5					
6	2.1			.26							
7	0.92										
8	1.67										
9	0.64										
10	1.39										
11	1.54							-			
12	1.04										
13	1.64			.077							
14	3.25										

Card 4	4					s	ystem Opt	ions					
System	Econ	Econ	Max Pct	Direct	Indirect	1st Stage			Ex	haust Air H	eat Recov	ery	
Set	Type	0n	· Outside	Evap	Evap	Evap	Fan	Effecti	veness	Control	Type	Exh-Side	Deck
Number	Flag	Point	Air	Cooling	Cooling	Cooling	Cycling	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2
1	DRY-BULB	65	3										
2	DRY-BULB	65	5.5										
3	DRY-BULB	65	8.8										
4	DRY-BULB	65	14										
5	DRY-BULB	65	9										
6	DRY-BULB	65	8				٠.						
7	DRY-BULB	65	2.4										

Vet on	. Ma	in		n.i	rect	Indirect	Auvilian	, Main	Main			Auvilianu
iysten let		oling			ap	Evap	Auxiliary Cooling	Heating	Main Preheat	Reheat	Mech.	Auxiliary Heating
umber		-	Economize		•	Coil	Coil	Coil	Coil	Coil	Humidity	
unber		AIL	AVAIL			0011	0011	OFF	OFF	OFF	полтитер	5011
2		AIL	AVAIL					OFF	OFF	OFF		
}		AIL	AVAIL					011	011	Off		
		AIL	AVAIL						1			
i		AIL	AVAIL									
, ,		AIL	AVAIL					OFF	OFF	OFF		
3		AIL	AVAIL					011	0.1	011		
Systen Set	n Di: Co	scrim ntrol	Night Purge Schedule	Opti Star	mum dule ART ART ART	Optimum ·	DUT On Period	የ CYCLING Pattern እ	Maximum	System HR Exhaust	Room HR Exhaust	
				OPST	ART	OPSTOP						
ard 4	lg	Htg R	et Mn Exh			Fan Over				LING FAN		
ard 4 ys (et !	lg an	Htg R Fan F	et Mn Exh an Fan	Aux Fan	Rm Ex Fan	Fan Ove h Opt Vn Sys Far	t n Mech	Air				
ys (et l um E	lg an	Htg R Fan F	et Mn Exh	Aux Fan	Rm Ex	Fan Ove th Opt Vn	t		MAIN COO	LING FAN	Confg	
ard 4 ys (et 1 um E	lg an	Htg R Fan F	et Mn Exh an Fan	Aux Fan	Rm Ex Fan	Fan Ove h Opt Vn Sys Far	t n Mech	Air	MAIN COO Air	LING FAN Size	Confg BLOW	
ard 4 ys (et ! um E	lg an	Htg R Fan F	et Mn Exh an Fan	Aux Fan	Rm Ex Fan	Fan Ove h Opt Vn Sys Far	t n Mech	Air	MAIN COO Air	LING FAN Size	Confg BLOW BLOW	
ard 4 ys (et 1 um E	lg an	Htg R Fan F	et Mn Exh an Fan	Aux Fan	Rm Ex Fan	Fan Ove h Opt Vn Sys Far	t n Mech	Air	MAIN COO Air	LING FAN Size	Confg BLOW BLOW BLOW	-
ard 4 lys (let f lum E	Clg Fan Eff	Htg R Fan F Eff E	et Mn Exh an Fan ff Eff	Aux Fan Eff	Rm Ex Fan Eff	Fan Over th Opt Vn Sys Far Eff	t n Mech Eff	Air Value	MAIN COO Air Units	LING FAN Size	Confg BLOW BLOW	
ard 4 lys (let f lum E	Clg Fan Eff	Htg R Fan F Eff E	et Mn Exh an Fan	Aux Fan Eff	Rm Ex Fan Eff	Fan Over th Opt Vn Sys Far Eff	t n Mech Eff	Air Value	MAIN COO Air Units	LING FAN Size	Confg BLOW BLOW BLOW	
ard 4 ys (in the second of th	elg Fan Eff	Htg R Fan F Eff E	et Mn Exh an Fan ff Eff Equip	Aux Fan Eff	Rm Ex Fan Eff	Fan Over ch Opt Vn Sys Far Eff	t n Mech Eff tive #1	Air Value	MAIN COO Air Units	LING FAN Size Meth	Confg BLOW BLOW BLOW BLOW	-
ard 4 ys (et 1 um E	elg Fan Eff	Htg R Fan F Eff E	et Mn Exh an Fan ff Eff Equip	Aux Fan Eff	Rm Ex Fan Eff Sectio	Fan Over th Opt Vn Sys Far Eff	t n Mech Eff tive #1	Air Value	MAIN COO Air Units	LING FAN Size Meth	Confg BLOW BLOW BLOW BLOW	
dard 4	Fan Fan Fan Fan Fan Fan Fan Fan Fan Fan	Htg R Fan F Eff E	et Mn Exh an Fan ff Eff Equip c Consump	Aux Fan Eff	Rm Ex Fan Eff Section	Fan Over th Opt Vn Sys Far Eff on Alterna	t n Mech Eff tive #1	Air Value	MAIN COO Air Units	LING FAN Size Meth	Confg BLOW BLOW BLOW BLOW	nd Limit -
Sys (Set A Lum E i i i 4	fan Eff	Htg R Fan F Eff E Ele 'e Tim	et Mn Exh an Fan ff Eff Equip c Consump e of Day	Aux Fan Eff	Rm Ex Fan Eff Section	Fan Over th Opt Vn Sys Far Eff on Alterna	t n Mech Eff tive #1	Air Value	MAIN COO Air Units	LING FAN Size Meth	Confg BLOW BLOW BLOW BLOW	

Card 45----- Equipment Schedules -----

Loads			•••••	Cooling	ı Load Assig	nment					• • • • • • • • • • • • • • • • • • • •
	Coil Coolir	ıg									
	s To Equip	ent -Group	1Group 2-	-Group 3-	-Group 4-	-Group 5	Group	6Gr	oup 7-	-Group 8	3Group 9
Cool	Ref Sizing	Begin E	End Begin End	Begin End	l Begin End	Begin En	d Begin I	End Begi	in End	Begin Er	nd Begin Er
1	PKPLA	T 1 1	14								
62			Co	olina Equir	vment Darame	tors					
Equip											
Code		Capacity-	-COOLING	rgy	Capacit		Energy		Seq		emand
Name		Value Units	s Value		Value Un			nits		•	.imit
EQ1010		154 TONS		KW					Num 1	Type N	umber
EQ1010		154 TONS							1	SER	
E@1010)3 I	104	142	KW .	91 10	NS 8	8 K	M	2	SER	
			Cooling P ONDENSER							-	
			oad Full Load				Cald	Cooling	u:		
Value		Value					Cold	•			
39.3	KW	27.5	Units	Value	Units	controt	Storage		Acces	ss.	
0	KW							1	1		
U	NW.	18.3	KW					2			
Max CW Reset	Shed	Evap er Precool	Free Cooling Heat Type Sour	Cond Enterince Temp 85	Cond ng Min Oper Temp 65		Cond Re To Ref Number 1		(e)		
			•	85	65	HEATING		95			
				-							
				- Heating L	oad Assign.	ent					
	All Coil	C 1	2	A 7				_	-		_
			Group 2-								
rence			d Begin End	Begin End	Regin Fud	Begin End	Begin En	d Begin	End I	Begin End	Begin End
	1	3 5		_							
·	3	/ 13									
					2-						
				Heating Ed	uipment Par	ameters					
I 67	uip Numl	er HW Pmp		-	 Energy			Switch			Demand
l 67 : Equ		•	Са	p'y	Rate		•		Hot	Misc.	Limit
	de Of	Full Ld						- /			
Equ		Full Ld s Value		lue Units	Value	Units	Number	Control	Stra	Acc. Co	gen Numbe
Equ Cod er Nam	me Uni		Units Va	lue Units	Value 100	Units PCTEFF	Number	Control	Strg	Acc. Co	ogen Numbe
Equ Cod per Nam EQ2	me Uni	s Value		lue Units	Value 100 100	Units PCTEFF PCTEFF	Number	Control	Strg	Acc. Co	ogen Numbe
	3	7 13		Heating Ec	quipment Par Energy	ameters	Seq	Switch	Hot	м	isc.

			Fan Equip	ment Parame	eters		
System		_		.			0-6:1
Set	Cooling	Heating	Return	Exhaust	Auxiliary	Room	Optional
Number	Fan	Fan	Fan	Fan	Supply	Exhaust	Ventilation
1	EQ4223			EQ4223		EQ4003	
2	EQ4223			EQ4223			
3	EQ4223			EQ4223			
4	EQ4223			EQ4223		•	
5	EQ4223			EQ4223		EQ4003	
6	EQ4223			EQ4223			
7	EQ4003						
8	EQ4003						
9	EQ4003						
10	EQ4003						
11	EQ4003						
12	EQ4003						
13	EQ4003			EQ4223			
14	EQ4223						

Card 70)			Fan	Equip	oment K	W Over	rides				
			IER SYS					PRIORI				
System	Cool	Heat	Ret	Exh	Aux	Room	0pt				Room	0pt
Set	Fan	Fan	Fan	Fan	Sup	Exh	Vent	Cool	Heat	Aux	Exh	Vent
Number	K₩	KW	KW	KW	KW	KW	KW	Fan	Fan	Fan	Fan	Fan
1	6.5			.246		1.2						
2	10.2			.635								
3	6.5			.405								
4	17.3			1.19								
5	13.9			.759		2.7						
6	7.4			.506								
7	3.3											
8	5.6				-							
9	1.8											
10	3.7											
11	4.7											
12	3.3											
13	5.6			.15								
14	22.7				_							

Card 71-			Base	Utility P	arameters				
Base	Base	Hourly	Hourly			Equip	Demand		
Utility	Utility	Demand	Demand	Schedule	Energy	Reference	Limiting	Entering	Leaving
Number	Descrip	Value	Units	Code	Type	Number	Number	Temp	Temp
1	CHW PIPING LOSS	4.64	TONS	AVAIL	CHILL-LD	1			
2	HW PIPING LOSS	77.4	MBH	AVAIL	HOT-LD	1			

Card 7	4			Condenser	/ Coolin	g Tower Pa	arameters				
	Cooling			Energy	Energy			Number	Percent	Low Spd	Low Spd
Tower	Tower	Capacity	Capacity	Consump	Consump	Fluid	Tower	Of	Airflow	Energy	Energy
Ref	Code	Value	Units	Value	Units	Туре	Type	Cells			
1	EQ5100			12.5	K₩	T-WATER	CTOWER	1			

				• • • • • • • • • • • • • • • • • • • •	,		ar ame c	. •					
	Cooling			Energy	Energy			Number	Percent	Low Spd	Low Sp	xd	
ower	Tower	Capacity	Capacity	Consump	Consump	Fluid	Tower	Of	Airflow	Energy	Energy	/	
≀ef	Code	Value	Units	Value	Units	Type	Type	Cells	Low Spd	Value	Units		
2	EQ5100			10.8	KW	T-WATER	CTOWE	R 1					
					w: 1 f -								
ard	/5 #1			#2		aneous Aco	essory		#3				
lisc	Equip	Energy	Energy So			Energy	Energy	Sched	Equip	Energy	Energ	y Sched	
	Code	Value	Units Co			Value	Units	Code	Code	Value	Unit	s Code	
	EQ5020	16.6	KW DA	AYSCHED									
	•••••	Equ	ipment Sect										
		LO	O-L, LC	,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								
Card						tion / TO) Sched	ıles	· • • • • • • • • • • • • • • • • • • •				
		lec Consump			4					Der	nand Limi -		
lter	native Ti	ime of Day	Time of i								Temper		
lumbe	er So	chedul e	Schedule	Max K		ative Des		า		Schedul	e Dri	ft	
2					ECO E	MOTOR REP	LMNT						
.oad Asgn Ref	All Coil Loads To		-Group 1	Group : d Begin E	2Grou	ıp 3Gr	oup 4-	-Group 5	Group d Begin E	6Gro	uр 7G	roup 8-	-Group
load Asgn Ref I	All Coil Loads To Cool Ref 1	Cooling Equipment Sizing PKPLANT	-Group 1 Begin En 1 14	Group : d Begin E	2Grou nd Begin Cooling E	up 3Gr n End Beg Equipment	oup 4- in End Paramet	-Group 5 Begin End ers	Group d Begin E	6Gro	up 7G n End Be	roup 8- gin End Dema	-Group Begin E
Load Asgn Ref I Card Cool Ref	All Coil Loads To Cool Ref 1 62 Equip Code	Cooling Equipment Sizing PKPLANT Num OfC	-Group 1 Begin En 1 14Capacity	Group d d Begin E	2Ground Begin Cooling E	up 3Gr n End Beg Equipment 	oup 4- in End ParametH apacity	-Group 5 Begin End ers EAT RECOV	Group d Begin E	6Groi	up 7G n End Be Seq Order S	roup 8- gin End Dema ieq Limi	-Group Begin E
Load Asgn Ref I Card Cool Ref	All Coil Loads To Cool Ref 1 62 Equip Code Name	Cooling Equipment Sizing PKPLANT Num OfC Units Val	-Group 1 Begin En 1 14	Group E d Begin E	2Ground Begin Cooling E	up 3Gr n End Beg Equipment s Val	oup 4- in End ParametH apacity ue Uni	-Group 5 Begin End ers EAT RECOV ts V	Group d Begin E ERYEnergy atue Ur	6Gro	up 7G n End Be Seq Order S Num T	roup 8- gin End Dema Geq Limi	-Group Begin E
oad Asgn Ref I Card Cool Ref Num	All Coil Loads To Cool Ref 1 62 Equip Code Name Eq1010S	Cooling Equipment Sizing PKPLANT Num OfC Units Val	-Group 1 Begin En 1 14	Group d d Begin E	2Ground Begin Cooling E nergy Units KW	ep 3Gr Equipment S Val	oup 4- in End ParametH apacity ue Uni	-Group 5 Begin End ers EAT RECOV ts V S 8	Group d Begin E ERY ERY Salue Ur 8 K	6Gro	up 7G n End Be Seq Order S Num T 1 S	roup 8- gin End Dema seq Limi ype Numb	-Group Begin E
oad sgn lef Card Cool Ref	All Coil Loads To Cool Ref 1 62 Equip Code Name	Cooling Equipment Sizing PKPLANT Num OfC Units Val	-Group 1 Begin En 1 14	Group E d Begin E	2Ground Begin Cooling E	up 3Gr n End Beg Equipment s Val	oup 4- in End ParametH apacity ue Uni	-Group 5 Begin End ers EAT RECOV ts V S 8	Group d Begin E ERYEnergy atue Ur	6Gro	up 7G n End Be Seq Order S Num T 1 S	roup 8- gin End Dema Geq Limi	-Group Begin E
oad sgn ef Card Cool Ref	All Coil Loads To Cool Ref 1 62 Equip Code Name Eq1010S	Cooling Equipment Sizing PKPLANT Num OfC Units Val	-Group 1 Begin En 1 14	Group d d Begin E	2Ground Begin Cooling E nergy Units KW	ep 3Gr Equipment S Val	oup 4- in End ParametH apacity ue Uni	-Group 5 Begin End ers EAT RECOV ts V S 8	Group d Begin E ERY ERY Salue Ur 8 K	6Gro	up 7G n End Be Seq Order S Num T 1 S	roup 8- gin End Dema seq Limi ype Numb	-Group Begin E
coad lasgn def l Card Cool Ref Hum 1	All Coil Loads To Cool Ref 1 62 Equip Code Name Eq1010S Eq1010S	Cooling Equipment Sizing PKPLANT Num OfC Units Val 1 154	-Group 1 Begin En 1 14	Group d d Begin E	2Ground Begin Cooling E Units KW KW	equipment	oup 4- in End ParametH apacity ue Uni TON	-Group 5 Begin End ers EAT RECOV ts V S 8 S 8	Group d Begin E ERY ERY Salue Ur 8 K	6Gro	up 7G n End Be Seq Order S Num T 1 S	roup 8- gin End Dema seq Limi ype Numb	-Group Begin E
oad Asgn Ref I Card Cool Ref Num 1	All Coil Loads To Cool Ref 1 62Equip Code Name Eq1010S Eq1010S	Cooling Equipment Sizing PKPLANT Num OfC Units Val 1 154	-Group 1 Begin En 1 14	Group d Begin E OOLING Value 142 142	2Ground Begin Cooling E Units KW KW	equipment s Val 91	oup 4- in End ParametH apacity ue Uni TON	-Group 5 Begin End ers EAT RECOV ts V S 8 S 8	Group d Begin E ERY ERY Salue Ur 8 K	6Gro	up 7G n End Be Seq Order S Num T 1 S	roup 8- gin End Dema seq Limi ype Numb	-Group Begin E
Load Asgn Ref I Cool Ref Num 1 2 Card Cool	All Coil Loads To Cool Ref 1 62 Equip Code Name Eq1010S Eq1010S	Cooling Equipment Sizing PKPLANT Num OfC Units Val 1 154	-Group 1 Begin En 1 14	Group d d Begin E COOLING Value 142 142	2Ground Begind Cooling E	equipment s Val 91 91 TREC or A	ParametH capacity ue Uni TON	-Group 5 Begin End ers EAT RECOV ts V S 8 S 8	Group d Begin E ERY ERY alue Ur 8 KV 8 KV	6Gro	up 7G n End Be Seq Order S Num T 1 S 2 S	roup 8- gin End Dema seq Limi ype Numb	-Group Begin E
Load Asgn Ref I Cool Ref Num 1 2 Card Cool	All Coil Loads To Cool Ref 1 62 Equip Code Name Eq1010S Eq1010S	Cooling Equipment Sizing PKPLANT Num OfC Units Val 1 154	-Group 1 Begin En 1 14	Group d d Begin E COOLING Value 142 142 Cooling	2Ground Begind Cooling E Units KW KW Pumps arHi ad Full	equipment	oup 4- in End ParametH apacity ue Uni TON	-Group 5 Begin End ers EAT RECOV ts V S 8 S 8	Group d Begin E ERYEnergy alue Ur 8 KV 8 KV	6Gro	up 7G n End Be Seq Order S Num T 1 S 2 S	roup 8- gin End Dema seq Limi ype Numb	-Group Begin E
Load Asgn Ref I Card Cool Ref Num 1 Cool Ref Ref Ref Ref Ref Ref	All Coil Loads To Cool Ref 1 62 Equip Code Name Eq1010S Eq1010S	Cooling Equipment Sizing PKPLANT Num OfC Units Val 1 154	-Group 1 Begin En 1 14	Group : d Begin E. COOLING Value 142 142 Cooling IDENSER ad Full Lo	2Ground Begind Cooling E	equipment	oup 4- in End ParametH apacity ue Uni TON	-Group 5 Begin End ers EAT RECOV ts V S 8 S 8	Group d Begin E ERYEnergy alue Ur 8 KV 8 KV	6Grown Begin Be	Seq Order S Num T 1 S 2 S	roup 8- gin End Dema seq Limi ype Numb	-Group Begin E
Load Asgn Ref 1 Card Cool Ref Num 1 2 Card Cool	All Coil Loads To Cool Ref 1 62 Equip Code Name Eq1010S Eq1010S	Cooling Equipment Sizing PKPLANT Num OfC Units Val 1 154 1 154	-Group 1 Begin En 1 14	Group d d Begin E COOLING Value 142 142 Cooling	2Ground Begind Cooling E Units KW KW Pumps arHi ad Full	equipment	oup 4- in End ParametH apacity ue Uni TON	-Group 5 Begin End ers EAT RECOV ts V S 8 S 8	Group d Begin E ERYEnergy alue Ur 8 KV 8 KV	6Gro	up 7G n End Be Seq Order S Num T 1 S 2 S	roup 8- gin End Dema seq Limi ype Numb	-Group Begin E

Card	64			Cooli	ng Equip	ment Optic	ns			
Cool	Max	Load		Free		Cond	Cond	Cond Rej	Cond Rej	Cond Rej
Ref	CM	Shed	Evap	Cooling	Heat	Entering	Min.Oper	To Ref	To Ref	a HM
Num	Reset	Economizer	Precool	Type	Source	Тетр	Temp	Type	Number	Temp
1						85	65	HEATING	1	95
2						85	65	HEATING	2	95

Card 67 Heating Equipment Parameters														
Heat	Equip	Number	HW Pmp				Energy		Seq	Switch				Demand
Ref	Code	Of	Full Ld		Cap'y		Rate		Order	over	Hot	Misc.		Limit
Number	Name	Units	Value	Units	Value	Units	Value	Units	Number	Control	Strg	Acc.	Cogen	Number
1	EQ2002	1	0	KW			100	PCTEFF						
2	EQ2002	1	0	KW			100	PCTEFF						
3	EQ2263	1												

Card 69			Fan Equip	ment Parame	eters		
System							
Set	Cooling	Heating	Return	Exhaust	Auxiliary	Room	Optional
Number	Fan	Fan	Fan	Fan	Supply	Exhaust	Ventilation
1	EQ4223			EQ4223		EQ4003	
2	EQ4223		-	EQ4223			
3	EQ4223			EQ4223			
4	EQ4223			EQ4223			
5	EQ4223			EQ4223		EQ4003	
6	EQ4223			EQ4223			
7	EQ4003						
8	EQ4003						
9	EQ4003		-				
10	EQ4003						
.11	EQ4003					4-	
12	EQ4003						
13	EQ4003			EQ4223			
14	EQ4223						

Card 7			SYSTEM-													
Svetom						HER SYS		,	DEMAND							
•	Cool Fan	Fan	Fan	Exh Fan	Aux Sup	Room Exh		Cool	Heat	Aus	Exh	Opt Vent				
Set		KW	KW	KW	KW	KW	KW									
Number 4		KW	KW	.25	KW.		KW	Fan	Fan	Fan	Fan	Fan				
1	6.0					1.1										
2	9.7			.652												
3	6.0			.415												
4	16.6			1.225		2 /										
5	13.3			.779		2.4										
6	7.2			.519												
7	3.1															
8	5.0															
9	1.7															
10	3.5															
11	4.4															
12	3.1			15/												
13	5.0			.156												
14	22.3															
Number 1 2 Card 7	HW E	crip PIPING PIPING CO		Der Va 4.6 77	.4	Unit TONS MBH Conder Energy	and Sis C A A A A A A A A A A A A A A A A A A A	ode VAIL VAIL Cooli	нот	e LL-LD -LD er Pa	Numbe 1 1	s Numb Of Cell	per Percen	Temp t Low Spd w Energy	Temp	
Misc	#1 Equip	En	ergy	Energ	y Sc	ched	#2 Equi	p	Energy	"E	nergy	Sched	#3 Equip	Energy		
Ref	Code		lue	Units	Co	ode	Code	:	Value	U	nits	Code	Code	Value	Units	Code
1	EQ5020	15	.7	KW	DA	YSCHED										
			Equ			ion A				••••						
Card :	,. 59							escrip	otion /	TOD	Schedul	es				
Card :			 Consump					escrip)	otion /	TOD	Schedul	.es	•••••		and Limit	
	59	Elec		Elec	Dema		nand	escrip	otion /	TOD	Schedul	es	•••••			

Card 6	0					Cooling	g coud Assign	MICTIC					
	All Coil												_
sgn	Loads To	Equipm					Group 4-						
ef	Cool Ref	Sizing		Begin Er	nd Begin En	d Begin En	d Begin End	Begin End	Begin	End Beg	in End	Begin E	nd Begin
	1	PKPLAN	Τ ΄	1 14	•								
					(coling Equi	pment Parame	tore					
	guip												Demand
	Code					ergy						Seq	
	lame	Units	•	-		Units	Value Un				Num	•	
	WCRECIP		59	TONS	50						1	PAR	
	CENT123				122	KW					2	PAR	
							eferences					-	
							C or AUX		Cold	Cooling	Misc		
		Units		Value	units	Value	d Full Load Units	Control		_			
	Value 3.23	KW		5.58	KW	vatue	OHITES	1	a cor age	1	Acce.		
	9.35	KW		12.2	KW			1		2			
	,	14						•		_			
						Heating	Load Assignm	ent					
oad Assign Refer	Al nment Lo ence He 1	l Coil ads To ating Re	-G ef Be	roup 1- gin End 5	-Group 2- Begin End	-Group 3-	Load Assignm -Group 4- Begin End	-Group 5-	-Group 6	5Grou	ıp 7-	-Group 8-	-Group 9
∟oad Assign Refero N	Al nment Lo ence He	l Coil ads To ating Re	-G ef Be	roup 1- gin End	-Group 2- Begin End	-Group 3-	-Group 4-	-Group 5-	-Group 6	5Grou	ıp 7-	-Group 8-	-Group 9
oad Assign Refer	Al nment Lo ence He 1	l Coil ads To ating Re	-G ef Be	roup 1- gin End 5	-Group 2- Begin End	-Group 3-	-Group 4-	-Group 5-	-Group 6	5Grou	ıp 7-	-Group 8-	-Group 9
oad Assign Refero	Allnment Loence He	l Coil ads To ating Re	-G ef Be 3 7	roup 1- gin End 5 13	-Group 2- Begin End 14 14	-Group 3- Begin End	-Group 4- Begin End	-Group 5- Begin End	-Group 6 Begin Er	6Grou	p 7-	-Group 8- Begin Enc	-Group ⁽
oad Assign Refero P Card	All nment Lo ence He 1 2 67	l Coil ads To ating Re	-Gef Bee 3 7	roup 1-gin End 5 13	-Group 2- Begin End 14 14	-Group 3- Begin End	-Group 4- Begin End Guipment Par Energy	-Group 5- Begin End	-Group 6 Begin Er	5Grou nd Begin	p 7-	-Group 8- Begin End	-Group ⁹ I Begin En
oad Issign Refero Refero Refero	Allnment Loence He	l Coil ads To ating Re Numb Of	-Gef Bee 3 7	roup 1- gin End 5 13 	-Group 2- Begin End 14 14	-Group 3- Begin End Heating E	-Group 4- Begin End quipment Par Energy Rate	-Group 5- Begin End ameters	-Group 6 Begin Er Seq Order	5Grou nd Begin Switch over	p 7-	-Group 8- Begin End	-Group ⁹ I Begin En Dem
oad Assign Refer Refer Card	All nment Lo ence He 1 2 67	l Coil ads To ating Re Numb	-Gef Be 3 7	roup 1- gin End 5 13 W Pmp full Ld	-Group 2- Begin End 14 14	-Group 3- Begin End Heating E Cap'y Value Units	-Group 4- Begin End quipment Par Energy Rate Value	-Group 5- Begin End ameters Units	-Group 6 Begin Er Seq Order	5Grou nd Begin Switch over	p 7-	-Group 8- Begin End	-Group ⁹ I Begin En
oad Assign Refero Refero Heat Ref	All nment Lo ence He 1 2 67 Equip Code r Name OILBLR	l Coil ads To ating Re Numb Of Unit	-Gef Be 3 7	roup 1- gin End 5 13 W Pmp full Ld ralue 51	-Group 2- Begin End 14 14	-Group 3- Begin End Heating E	-Group 4- Begin End quipment Par Energy Rate	-Group 5- Begin End ameters	-Group 6 Begin Er Seq Order	Switch over Control	p 7-	-Group 8- Begin End	-Group ⁹ I Begin En Dem
oad Issign Refero Refeat Ref	All nment Lo ence He 1 2 67 Equip Code r Name	l Coil ads To ating Re Numb Of Unit	-Gef Be 3 7	roup 1- gin End 5 13 W Pmp full Ld	-Group 2- Begin End 14 14	-Group 3- Begin End Heating E Cap'y Value Units	-Group 4- Begin End quipment Par Energy Rate Value	-Group 5- Begin End ameters Units	-Group 6 Begin Er Seq Order	5Grou nd Begin Switch over	p 7-	-Group 8- Begin End	-Group ⁹ I Begin En Dem
Load Assign Referd Card Heat Ref	All nment Lo ence He 1 2 67 Equip Code r Name OILBLR	l Coil ads To ating Re Numb Of Unit	-Gef Be 3 7	roup 1- gin End 5 13 W Pmp full Ld ralue 51	-Group 2- Begin End 14 14	-Group 3- Begin End Heating E Cap'y Value Units	-Group 4- Begin End quipment Par Energy Rate Value	-Group 5- Begin End ameters Units	-Group 6 Begin Er Seq Order	Switch over Control	p 7-	-Group 8- Begin End	-Group ⁹ I Begin En Dem
oad Issign Refero Refeat Ref	All nment Lo ence He 1 2 67 Equip Code r Name OILBLR	l Coil ads To ating Re Numb Of Unit	-Gef Be 3 7	roup 1- gin End 5 13 W Pmp full Ld ralue 51	-Group 2- Begin End 14 14	-Group 3- Begin End Heating E Cap'y Value Units	-Group 4- Begin End quipment Par Energy Rate Value	-Group 5- Begin End ameters Units	-Group 6 Begin Er Seq Order	Switch over Control	p 7-	-Group 8- Begin End	-Group ⁹ I Begin En Dem
oad ssign efer eard deat def lumbe	All nment Lo ence He 1 2 67 Equip Code r Name OILBLR	l Coil ads To ating Re Numb Of Unit 1	-GPF Be 3 7 7 Per H F F F F F V V V V V V V V V V V V V V	roup 1- gin End 5 13 W Pmp full Ld falue 51	-Group 2- Begin End 14 14 Units	-Group 3- Begin End Heating E Cap'y Value Units	-Group 4- Begin End quipment Par Energy Rate Value 900	-Group 5- Begin End ameters Units	-Group 6 Begin Er Seq Order	Switch over Control	p 7-	-Group 8- Begin End	-Group ⁹ I Begin En Dem
oad ssign efer efer eleat ef lumbe	All nment Lo ence He 1 2 67 Equip Code r Name OILBLE EQ2263	l Coil ads To ating Re Numb Of Unit 1	-GPF Be 3 7 7 Per H F F F F F V V V V V V V V V V V V V V	roup 1- gin End 5 13 W Pmp full Ld falue 51	-Group 2- Begin End 14 14 Units	-Group 3- Begin End Heating E Cap'y Value Units 720 MBH	-Group 4- Begin End quipment Par Energy Rate Value 900	-Group 5- Begin End ameters Units	-Group 6 Begin Er Seq Order	Switch over Control	p 7-	-Group 8- Begin End	-Group ⁹ I Begin En Dem
oad ssign sefer card deat sef sumbe	All nment Lo ence He 1 2 67 Equip Code r Name OILBLE EQ2263	l Coil ads To ating Re Numb Of Unit	-GPF Be 3 7 7 Per H F F F F F V V V V V V V V V V V V V V	gin End 5 13 13 W Pmp Gull Ld /alue 51	-Group 2- Begin End 14 14 Units	-Group 3- Begin End Heating E Cap'y Value Units 720 MBH	-Group 4- Begin End quipment Par Energy Rate Value 900	-Group 5- Begin End ameters Units	-Group 6 Begin Er Seq Order Number	Switch over Control	p 7-	-Group 8- Begin End	-Group ⁹ I Begin En Dem
oad Assign Refer Card Heat Ref Lumbe 1 2 Card Syste	All nment Lo ence He 1 2 67 Equip Code r Name OILBLE EQ2263	l Coil ads To ating Re Numb Of Unit 1 1	-G ef Be 3 7 7	gin End 5 13 13 W Pmp Gull Ld /alue 51	-Group 2- Begin End 14 14 Units KW Equipment P	-Group 3- Begin End Heating E Cap'y Value Units 720 MBH	-Group 4- Begin End quipment Par Energy Rate Value 900	-Group 5- Begin End ameters Units MBH	-Group 6 Begin Er Seq Order Number	Switch over Control	p 7-	-Group 8- Begin End	-Group ⁹ I Begin En Dem
_oad _oad Assign Refer 1 2 Card Ref Numbe 1 2 Card Syste Set Numbe	All nment Lo ence He 1 2 67 Equip Code r Name OILBLE EQ2263	l Coil ads To ating Re Numb Of Unit 1 1	-G ef Bee 3 7 7	roup 1- gin End 5 13 W Pmp Full Ld ralue 51	-Group 2- Begin End 14 14 Units KW Equipment P	-Group 3- Begin End Heating E Cap'y Value Units 720 MBH arameters ust Auxili Supply	-Group 4- Begin End quipment Par Energy Rate Value 900	-Group 5- Begin End ameters Units MBH	-Group 6 Begin Er Seq Order Number	Switch over Control	p 7-	-Group 8- Begin End	-Group ⁹ I Begin En Dem
Load Assign Refer 1 2 Card Heat Ref Numbe	All nment Lo ence He 1 2 67 Equip Code r Name OILBLE EQ2263	Coil ads To ating Re Numb Of Unit 1 1	-G ef Bee 3 7 7	roup 1- gin End 5 13 W Pmp Full Ld ralue 51	-Group 2- Begin End 14 14 Units KW Equipment P urn Exha	-Group 3- Begin End Heating E Cap'y Value Units 720 MBH arameters ust Auxili Supply	-Group 4- Begin End quipment Par Energy Rate Value 900	-Group 5- Begin End ameters Units MBH	-Group 6 Begin Er Seq Order Number	Switch over Control	p 7-	-Group 8- Begin End	-Group ⁹ I Begin En Dem

Card 69		·	Fan Equip	ment Parame	eters		
System							
Set	Cooling	Heating	Return	Exhaust	Auxiliary	Room	Optional
Number	Fan	Fan	Fan	Fan	Supply	Exhaust	Ventilation
4	EQ4223			EQ4223			
5	EQ4223			EQ4223		EQ4003	
6	EQ4223			EQ4223			
7	EQ4003					•	
8	EQ4003						
9	EQ4003						
10	EQ4003						
11	EQ4003						
12	EQ4003						
13	EQ4003			EQ4223			
14	EQ4223						

Card 70				Fan	Equip	quipment KW Overrides								
MAIN SYSTEM					OT	IER SYS	TEM	D	EMAND	PRIORITY				
System	Cool	Heat	Ret	Exh	Aux	Room	Room Opt				Room	0pt		
Set	Fan	Fan	Fan	Fan	Sup	Exh	Vent	Cool	Heat	Aux	Exh	Vent		
Number	KW	KW	KW	KW	KW	KW	KW	Fan	Fan	Fan	Fan	Fan		
1	6.0			.25		1.1								
2	9.7			.652										
3	6.0			.415										
4	16.6			1.225										
5	13.3			.779		2.4								
6	7.2			.519										
7	3.1													
8	5.0													
9	1.7													
10	3.5													
11	4.4													
12	3.1													
13	5.0			.156										
14	22.3													

Card 71-			Base	Utility P	arameters				
Base	Base	Hourly	Hourly			Equip	Demand		
Utility	Utility	Demand	Demand	Schedule	Energy	Reference	Limiting	Entering	Leaving
Number	Descrip	Value	Units	Code	Type	Number	Number	Temp	Тетр
1	CHW PIPING LOSS	4.64	TONS	AVAIL	CHILL-LD	1			
2	HW PIPING LOSS	77.4	MRH	AVAIL	HOT-LD	1			

Control Load Load Air Sched
Reference Value Units DB Code
1 60 TONS

Card 7	4			Condenser	/ Coolin	g Tower	Parameters				
	Cooling			Energy	Energy					Low Spd	Low Spd
Tower	Tower	Capacity	Capacity	Consump	Consump	Fluid		Of	Airflow	•	Energy
Ref	Code	Value	Units	Value	Units	Туре	Type	Cells	Low Spd	٠,	Units
1	EQ5100			12.0	KW	T-WATER	CTOWER	1	·		
2	EQ5100			10.4	KW	T-WATER	CTOWER	1			

Utility Description Reference Table

```
Schedules:
     AVAIL AVAILABLE (100%)
     CLGONLY COOLING ONLY (DESIGN)
     DAYSCHED COOLING FAN SCHEDULE CODE
     OFF ALWAYS OFF
     OFFICEL1 TYPICAL OFFICE SCHEDULE FOR LIGHTING
     OFFICEL2 TYPICAL OFFICE SCHEDULE 1 LIGHTING-25%
     OFFICEL7 TYPICAL OFFICE SCHEDULE 1-OCC. SEN ECO
     OFFICEL8 TYPICAL OFFICE SCHEDULE 2-OCC. SEN ECO
     OFFICEL9 TYPICAL OFFICE SCHEDULE 3-OCC. SEN ECO
     OFFICEM1 TYPICAL UPS MISCELLANEOUS EQ. SCHEDULE
     OFFICEP1 TYPICAL OFFICE SCHEDULE FOR PEOPLE
     OFICEL10 TYPICAL OFFICE SCHEDULE 4-OCC. SEN ECO
     OFICEL11 TYPICAL OFFICE SCHEDULE 5-OCC. SEN ECO
     OFICEL12 TYPICAL OFFICE SCHEDULE 6-OCC. SEN ECO
     OFICEL13 TYPICAL OFFICE SCHEDULE 6-OCC. SEN ECO
    OFICEL14 TYPICAL OFFICE SCHEDULE 7-OCC. SEN ECO
    OFICEL15 TYPICAL OFFICE SCHEDULE 8-OCC. SEN ECO
    OFICEL16 TYPICAL OFFICE SCHEDULE 9-OCC. SEN ECO
    OFICEL17 TYPICAL OFFICE SCHEDULE 100CC, SEN ECO
    OFICEL18 TYPICAL OFFICE SCHEDULE 110CC. SEN ECO
    OFICEL19 TYPICAL OFFICE SCHEDULE 120CC. SEN ECO
    OFICEL20 TYPICAL OFFICE SCHEDULE 13OCC. SEN ECO
    OFICEL21 TYPICAL OFFICE SCHEDULE 140CC. SEN ECO
    OFICEL22 TYPICAL OFFICE SCHEDULE 15OCC. SEN ECO
    OFICEL23 TYPICAL OFFICE SCHEDULE 160CC. SEN ECO
    OPSTART OPTIMUM START COOLING FAN SCHED. CODE
    OPSTOP OPTIMUM STOP COOLING FAN SCHED. CODE
System:
    BPMZ BYPASS MULTIZONE
    COMP COMPUTER ROOM UNIT
    VRH VARIABLE VOLUME REHEAT
Equipment:
    Cooling:
         EQ1010S 2-STG CTV<190 TONS W\HT REC(95 DEG HW)
         YCENT123 YORK CENT. R-123 CHILLER
         YWCRECIP YORK W.C. RECIP. CHILL.
    Heating:
         EQ2002 GAS FIRED STEAM BOILER
         EQ2263 ELECTRIC RESISTANCE HEAT WITH FAN
         OILBLR OIL FIRED HOT WATER BOILER
    Fan:
         EQ4003 FC CENTRIFUGAL - CONSTANT VOLUME
         EQ4223 FC FAN WARIABLE SPEED DRIVE
         Tower:
              EQ5100 COOLING TOWER FANS
     . Misc:
          EQ5020 HEATING WATER CIRCULATION PUMP
```

EEAP ENERGY STUDY - HELSTF
WHITE SANDS - ALAMOGORDO, NEW MEXICO
FORT WORTH CORPS OF ENGINEERS
HUITT-ZOLLARS, INC.
LSTC BUILDING

EXISTING LSTC BUILDING

Weather File Code:

Location: HOLLOMAN AFB; ALAMAGORDO, N.M. Latitude: 33.0 (deg)

Latitude: 33.0 (deg)
Longitude: 106.0 (deg)
Time Zone: 7

Elevation: 4,093 (ft)
Barometric Pressure: 25.6 (in. Hg)

Summer Clearness Number: 1.05
Winter Clearness Number: 1.00
Summer Design Dry Bulb: 96 (F)
Summer Design Wet Bulb: 68 (F)
Winter Design Dry Bulb: 19 (F)
Summer Ground Relectance: 0.20
Winter Ground Relectance: 0.20

Air Density: 0.0648 (Lbm/cuft)
Air Specific Heat: 0.2444 (Btu/lbm/F)
Density-Specific Heat Prod: 0.9511 (Btu-min./hr/cuft/F)

Latent Heat Factor: 4,186.5 (Btu-min./hr/cuft)
Enthalpy Factor: 3.8908 (Lb-min./hr/cuft)

Design Simulation Period: June To November
System Simulation Period: January To December
Cooling Load Methodology: TETD/Time Averaging

Time/Date Program was Run: 17:15: 0 1/ 2/96

Dataset Name: LSTC .TM

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 1
EXISTING SECONDARY EQUIPMENT AND SYSTEMS

System Totals

Percent	Cooling Load		Heatin	ng Load		Cooling	Airflow		Heating Airflow				
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours	
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)		
0 - 5	11.5	0	0	-169,241	0	0	10,171.0	0	0	0.0	n	n	
5 - 10	23.1	0	0	-338,482	0	0	20,342.1	0	0	0.0	0	n	
10 - 15	34.6	0	0	-507,723	0	0	30,513.2	0	0	0.0	0	n	
15 - 20	46.2	0	0	-676,964	0	0	40,684.2	0	0	0.0	0	0	
20 - 25	57.7	0	0	-846,205	16	1,415	50,855.3	0	0	0.0	0	0	
25 - 30	69.3	0	0	-1,015,446	57	4,968	61,026.3	0	0	0.0	0	0	
30 - 35	80.8	0	0	-1,184,687	27	2,377	71,197.4	0	0	0.0	0	0	
35 - 40	92.4	0	0	-1,353,928	0	0	81,368.4	0	0	0.0	0	0	
40 - 45	103.9	0	0	-1,523,169	0	0	91,539.5	0	0	0.0	0	0	
45 - 50	115.5	0	0	-1,692,410	0	0	101,710.5	0	0	0.0	0	0	
50 - 55	127.0	0	0	-1,861,651	0	0	111,881.6	0	0	0.0	0	0	
55 - 60	138.5	3	227	-2,030,892	0	0	122,052.6	0	0	0.0	0	0	
60 - 65	150.1	22	1,900	-2,200,133	0	0	132,223.7	0	0	0.0	0	٥	
65 - 70	161.6	19	1,647	-2,369,374	0	0	142,394.7	0	0	0.0	0	0	
70 - 75	173.2	19	1,682	-2,538,615	0	0	152,565.8	0	0	0.0	0	0	
75 - 80	184.7	21	1,801	-2,707,856	0	0	162,736.8	0	0	0.0	0	0	
80 - 85	196.3	14	1,241	-2,877,097	0	0	172,907.9	. 0	0	0.0	0	0	
85 - 90	207.8	3	262	-3,046,339	0	0	183,078.9	0	0	0.0	0	0	
90 - 95	219.4	0	0	-3,215,579	0	C	193,250.0	0	0	0.0	0	0	
95 - 100	230.9	0	0	-3,384,820	0	0	203,421.0	100	8,760	0.0	0	0	
Hours Off	0.0	0	0	0	0	0	0.0	0	0	0.0	0	8,760	

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 EXISTING PRIMARY EQUIPMENT

				E (UIP	MENT	ENE	RGY	CONSI	JMPT	I O N			
Ref	Equip					Mon	thly Con	sumption						
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
		Lighting	Systems											
U	LIGHTS ELEC	100893	91135	101273	97577	101083	97957	100702	101273	97577	101083	97577	100702	1,188,832
	PK	151.4	151.4	151.4	151.4	151.4	151.4	151.4	151.4	151.4	151.4	151.4	151.4	151.4
		I						-						
1	MISC LD													
	ELEC	26931	24324	26931	26062	26931	26062	26931	26931	26062	26931	26062	26931	317,085
	PK	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4
2	MISC LD													2
_	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD			_	_	_	_	٠.		_		_	_	
	OIL PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 0.0	0
	FK	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD		*											
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
•	P HOTH20	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC FD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1			BAS	E UTILIT	1									
	CHILLD	3452	3118	3452	3341	3452	3341	3452	3452	3341	3452	3341	3452	40,646
	PK	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
_														
2	UOTI D	F7/		E UTILIT' 576		57/	557	F7/	F7/		F7/		F74	4 700
	HOTLD PK	576 0.8	520 0.8	0.8	557 0.8	576 0.8	557 0.8	576 0.8	576 0.8	557 0.8	576 0.8	557 0,8	576 0.8	6,780 0.8
	1.	0.0	0.0	0.0	-	0.0	.0.0				0.0	0,0	0.0	0.0
1	EQ1010S		2-9	TG CTV<1	O TONS	W\HT REC	(95 DEG	HW)	Chiller Ch	1 -1				
	ELEC	65518	59177	65518	63404	65518	63404	65518	65518	63404	65518	63404	65518	771,420
	PK	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1
4	E0E100			N INC TOU	TD CANO	Twr.	Fan CT-1	A						
1	EQ5100 ELEC	44	26	LING TOWN 42	227	1482	5184	8151	8142	5449	740	20	33	29,539
	PK	2.0	2.1	2.2	4.3	.8.1	12.5	12.5	12.5	12.5	5.7	2.1	2.0	12.5
		†		· · · · · · · · · · · · · · · · · · ·										

				E 0	UIPI	MENT	ENEI	RGY	CONSI	UMPT	I O N			
Ref	Equip					Mont	thly Cons	sumption		- 				
Num	Code	Jan	Feb	Mar	Арг	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
1	EQ5100		cool	ING TOWE	R FANS									
	WATER	65	61	72	71	78	79	80	82	74	74	65	65	867
	PK	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2
1	EQ5001		CHIL	LED WATE	R PUMP	- CONSTA	ANT VOLU	ME C	HW Pum	p P-7				r
	ELEC	29239	26410	29239	28296	29239	28296	29239	29239	28296	29239	28296	29239	344,268
	PK	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3
1	EQ5010	·	CONL	ENSER WA	TER PLIM	P-CV(HIGI	I FFFIC	CN	ID Pump 1	IOA				
·	ELEC	20460	18480	20460	19800	20460	19800	20460	20460	19800	20460	19800	20460	240,900
	PK	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
	EQ5300		CONT	COOL DANG	. 0 1117	EDI OCKC								
1	ELEC	744	672	FROL PANE 744	.L & INII 720	744	720	744	744	720	744	720	7//	0 7/0
	PK	1.0	1.0	1.0						720			744	8,760
	PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1	EQ5020		HEAT	TING WATE	R CIRCU	LATION PL	JMP	HW pump	P-5					
	ELEC	12350	11155	12350	11952	12350	11952	12350	12350	11952	12350	11952	12350	145,416
	PK	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6
2	EQ1010S		2-5	rg ctv<19	O TONS I	J∖HT REC	(95 DEG	HW)	Chiller Ch	1-3				
	ELEC	33193	32202	38611	41043	47302	51004	56556	56313	47456	42616	34370	34111	514,778
	PK	54.9	62.8	66.2	72.3	79.7	90.9	98.4	96.3	86.3	72.5	61.8	59.5	98.4
2	EQ5100		COOL	ING TOW	R FANS	Twr.	Fan CT-1	В						<u></u>
_	ELEC	3470	3499	4308	4811	5960	7122	8035	8031	7072	5262	3662	3608	64,84
	PK	6.5	7.3	7.5	9.1	10.8	10.8	10.8	10.8	10.8	9.7	6.9	7.0	10.8
2	EQ5100		COO	LING TOW	D FANS	-						•		
-	WATER	169	167	203	218	254	269	292	291	251	227	178	175	2,694
	PK	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.9
2	EQ5001		CHII	LLED WATE	D DIIMO	- CONST	ANT VOLU	uc						
-	ELEC	0	0	O WATE	0	0	0	ייב 0	0	0	0	0	0	(
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	. 0.0
_					-			CN	ID Pump 1	IOB			-	
2	EQ5010	4=				P-CV(HIG		,						
	ELEC	13615	12298	13615	13176	13615	13176	13615	13615	13176	13615	13176	13615	160,30
	PK	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3
2	EQ5300		CON.	TROL PANE	EL & INT	ERLOCKS								
2	EQ5300 ELEC	744	CON ⁻	TROL PANE	EL & INT 720	ERLOCKS 744	720	744	744	720	744	720	744	8,760

1 EQUOUS FC CENTRIFUGAL - CONSTANT VOLUME Fan AHS	er	Equip	- 				Mont	hly Cons	sumption						
ELEC	m	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
PK 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	1	EQ4003		FC C	ENTR I FUG	AL - CON	ISTANT VO	LUME	Fan AH1						i
ELEC 893 806 893 864 893 864 893 893 864 893 893 864 893 893 864 893 895 864 893 895 864 893 895 864 893 895 864 893 895 864 893 895 864 893 895 864 893 895 864 893 895 864 893 895 864 893 895		ELEC	4836	4368	4836	4680	4836	4680	4836	4836	4680	4836	4680	4836	56,940
ELEC 893 806 693 864 893 864 893 864 893 864 893 864 893 10,5 PK 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2		PK	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
PK	1	EQ4003		FC C	ENTR I FUG	AL - CON	ISTANT VO	LUME	Fan EF	-1				•	ſ
PK		ELEC	893	806	893	864	893	864	· 893	893	864	893	864	893	10,512
ELEC		PK	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
PK	1	EQ4003		FC C	ENTR I FUG	AL - CON	ISTANT VO	LUME	Fan AH	S1					
PK		ELEC	186	168	186	180	186	180	186	186	180	186	180	186	2,190
ELEC 7589 6854 7589 7344 7349 7344 7344		PK	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
ELEC 7589 6854 7589 7344 7589 7344 7589 7389 7344 7589 7389 7344 7589 7389 7344 7589 89,3 PK 10.2 10.2 10.2 10.2 10.2 10.2 10.2 10.2	2	EQ4003		FC C	ENTR I FUG	AL - CON	ISTANT VO	DLUME	Fan AH	2					
PK	_		7589						7589	7589	7344	7589	7344	7589	89,352
ELEC 485 438 485 469 485 469 485 469 485 469 485 469 485 5,7 PK 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7			·												10.7
ELEC	2	EQ4003		, FC C	ENTRIFUG	AL - CON	ISTANT VO	DLUME	Fan AHS	61					
PK	-		485						485	485	469	485	469	485	5,71
ELEC															0.
ELEC	3	FQ4003		FC C	ENTRIEUG	AL - CON	ISTANT VO	OLUMF.	Fan AH	3					
PK 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	_		4836						4836	4836	4680	4836	4680	4836	56,94
ELEC 309 279 309 299 309 299 309 299 309 299 309 299 309 299 309 299 309 309 299 309 309 309 299 309 309 309 309 299 309 309 309 309 309 309 309 309 309 3															6.
ELEC 309 279 309 299 309 299 309 309 299 309 299 309 299 309 299 309 299 309 3,6 PK 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4	3	FQ4003		FC (ENTRIFUC	AL - CON	ISTANT VO	OLUMF	Fan AH	S1					
PK	_		309						309	309	299	309	299	309	3,63
ELEC 12871 11626 12871 12456 1			——											 ;	0.
ELEC 12871 11626 12871 12456 12871 12871 12456 12871 1	4	FOANN		FC (FNTRIFIIC	:AI - CON	JSTANT VI	N UMF	Fan AH	5					
PK	•		12871						12871	12871	12456	12871	12456	12871	151.54
4 EQ4003 FC CENTRIFUGAL - CONSTANT VOLUME Fan AHS1 ELEC 911 823 911 882 911 882 911 911 882 911 882 911 10,7 PK 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2															17.
ELEC 911 823 911 882 911 882 911 911 882 911 882 911 10,7 PK 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2	4	E04003		FC (ENTRIFU	:	ISTANT VI	OLUMF	Fan AH	S1					
PK	•		911						911	911	882	911	882	911	10,73
ELEC 10342 9341 10342 10008 10342 10008 10342 10008 10342 10008 10342 10008 10342 10008 10342 10008 10342 121,7 PK 13.9 13.9 13.9 13.9 13.9 13.9 13.9 13.9															1.
ELEC 10342 9341 10342 10008 10342 10008 10342 10008 10342 10008 10342 10008 10342 121,7 PK 13.9 13.9 13.9 13.9 13.9 13.9 13.9 13.9	5	F04003	•	FC (CENTRIFILE	AL - CO	ISTANT V	OLUME	Fan AH	3					r
PK 13.9 13.9 13.9 13.9 13.9 13.9 13.9 13.9	-		10342						10342	10342	10008	10342	10008	10342	121,76
ELEC 2009 1814 2009 1944 2009 1944 2009 2009 1944 2009 1944 2009 23,6															13.
ELEC 2009 1814 2009 1944 2009 1944 2009 2009 1944 2009 1944 2009 23,6	5	FOADO3		FC (FNTPIFII	AI - 101	USTANT W	11 UMF	Fan EF	-2					
And the second s	,		2000						2000	2000	1047	2000	1944	2000	23 45
		PK	2.7	2.7	2.7	2.7	.2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	23,65

	F					N								
	Equip Code	Jan	Feb	Mar	Apr	Mont May	nty Cons June	sumption July	Aug	Sep	Oct	Nov	Dec	Tota
um	Code	Jan	1 60	nai	vhi	Hay	a di ie	July	Aug	зер	001	NOV	Dec	1018
5	EQ4003		FC C	ENTR I FUG.	AL - CON	STANT VO	LUME	Fan AHS	31					
-	ELEC	136	123	136	131	136	131	136	136	131	136	131	136	1,59
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.
6	EQ4003		FC C	ENTR I FUG.	AL - CON	STANT VO	LUME	Fan AH7						
	ELEC	5506	4973	5506	5328	5506	5328	5506	5506	5328	5506	5328	5506	64,82
	PK	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.
6	EQ4003		FC C	ENTR I FUG	AL - CON	STANT VO	LUME	Fan AHS	S1					
•	ELEC	386	349	386	374	386	374	386	386	374	386	374	386	4,54
	PK	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.
7	EQ4003		FC C	ENTR I FUG	AI - CON	STANT VO	LUME	Fan AH-	-8					
•	ELEC	2455	2218	2455	2376	2455	2376	2455	2455	2376	2455	2376	2455	28,90
	PK	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.
8	EQ4003		EC C	ENTRIFUG	AI - CON	STANT VO	LIME	Fan AH-	9					
Ū	ELEC	4166	3763	4166	4032	4166	4032	4166	4166	4032	4166	4032	4166	49,05
	PK	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.
9	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME	Fan AH-	10					
	ELEC	1339	1210	1339	1296	1339	1296	1339	1339	1296	1339	1296	1339	15,76
	PK	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.
10	EQ4003		FC C	ENTR I FUG	AL - CON	STANT VO	LUME	Fan AH-	11A					
	ELEC	2753	2486	2753	2664	2753	2664	2753	2753	2664	2753	2664	2753	32,41
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.
11	EQ4003	-	FC C	ENTRIFUG	AL - CON	STANT VO	LUME	Fan AH-	-11B					
	ELEC	3497	3158	3497	3384	3497	3384	3497	3497	3384	3497	3384	3497	41,17
	PK	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.
12	EQ4003		FC C	ENTR I FUG	AL - CON	STANT VO	LUME	Fan AH-	12					
	ELEC	2455	2218	2455	2376	2455	2376	2455	2455	2376	2455	2376	2455	28,90
	PK	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3
13	EQ4003		FC C	ENTR I FUG	AL - CON	STANT VO	DLUME	Fan AH-	-14					
	ELEC	4166	3763	4166	4032	4166	4032	4166	4166	4032	4166	4032	4166	49,0
	PK	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5
13	EQ4003	•	FC (ENTRIFUG	AL - CON	STANT VC	LUME	Fan AHS	S1					
-	ELEC	116	105	116	112	116	112	116	116	112	116	112	116	1,3

	Equip Cođe	Jan	Feb	Mar	Apr	Mont May	June		Aug	Sep	Oct	Nov	Dec	Tota
					·	•		Fan AH	-	•				
14	EQ4003	44000		ENTRIFUC						4/7//	14000	16344	16889	198,8
	ELEC PK	16889	15254 22.7	16889	16344 22.7	16889 22.7	16344 22.7	16889	16889 22.7	16344 22.7	16889	22.7	22.7	22
1	EQ2002	1	GAS	FIRED S	FAM BOLL	FR								
•	GAS	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1	EQ5020		HEAT	TING WATE	ER CIRCU	LATION P	JMP							
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	. 0
1	EQ5240		BOIL	LER FORCE	ED DRAFT	FAN								
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1	EQ5307		CON	TROLS										
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1	EQ5061			DENSATE										
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(
1	EQ5406		MAK	E-UP WAT	ER									
	WATER	0	0	0	0	0	0	0	0	0	0	0	0	_
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C
2	EQ2002		GAS	FIRED S	TEAM BOI	LER								
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C
2	EQ5020		HEA	TING WAT	ER CIRCU	LATION P	UMP							
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	.PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	. 0.0	0.0	
2	EQ5240		BOI	LER FORC		FAN								
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(
2	EQ5307		CON	TROLS										
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	. 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 2 EXISTING SECONDARY EQUIPMENT AND SYSTEMS

ECO-A, LSTC BUILDING

System Totals

Percent	Cool	ing Loa	d	Heati	ng Load		Cooling	Airflow		Heating	Airflow	
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours		Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
0 - 5	11.5	0	0	-169,241	0	0	10,171.0	0	0	0.0	0	0
5 - 10	23.1	0	0	-338,482	0	0	20,342.1	0	0	0.0	0	0
10 - 15	34.6	0	0	-507,723	0	0	30,513.2	0	0	0.0	0	0
15 - 20	46.2	0	0	-676,964	0	0	40,684.2	0	0	0.0	0	0
20 - 25	57.7	0	0	-846,205	. 0	0	50,855.3	0	0	0.0	0	0
25 - 30	69.3	0	0	-1,015,446	35	3,053	61,026.3	0	0	0.0	0	0
30 - 35	80.8	0	0	-1,184,687	60	5,246	71,197.4	0	0	0.0	0	0
35 - 40	92.3	0	0	-1,353,928	5	461	81,368.4	0	0	0.0	0	0
40 - 45	103.9	0	0	-1,523,169	0	0	91,539.5	0	0	0.0	0	0
45 - 50	115.4	0	0	-1,692,410	0	0	101,710.5	0	0	0.0	0	0
50 - 55	127.0	0	0	-1,861,651	0	0	111,881.6	0	0	0.0	0	0
55 - 60	138.5	10	853	-2,030,892	0	0	122,052.6	0	0	0.0	0	0
60 - 65	150.0	27	2,404	-2,200,133	0	0	132,223.7	0	0	0.0	0	0
65 - 70	161.6	17	1,504	-2,369,374	0	0	142,394.7	0	0	0.0	0	0
70 - 75	173.1	21	1,837	-2,538,615	0	0	152,565.8	0	0	0.0	0	0
75 - 80	184.7	17	1,513	-2,707,856	0	0	162,736.8	0	0	0.0	0	0
80 - 85	196.2	7	629	-2,877,097	0	0	172,907.9	0	0	0.0	0	0
85 - 90	207.8	0	20	-3,046,339	0	0	183,078.9	0	0	0.0	0	0
90 - 95	219.3	0	0	-3,215,579	0	0	193,250.0	0	0	0.0	0	0
95 - 100	230.8	0	0	-3,384,820	0	0	203,421.0	100	8,760	0.0	0	0
Hours Off	0.0	0	0	0	0	0	0.0	0	0	0.0	0	8,760

				E 0	UIPI	MENT	ENE	RGY	CONSI	JMPT:	I O N			• • • • • • • • • • • • • • • • • • • •
Ref	Equip					Mon	thly Con	sumption						
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
٥	LIGHTS	Lighting Sy	stems											-
·	ELEC	63144	57037	63383	61068	63263	61308	63024	63383	61068	63263	61068	63024	744,034
	PK	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8
1	MISC LD													
	ELEC	26931	24324	26931	26062	26931	26062	26931	26931	26062	26931	26062	26931	317,085
	PK	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH20	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1			DAG	E UTILIT										
•	CHILLD	3452	3118	3452	3341	3452	3341	3452	3452	3341	3452	3341	3452	40,646
	PK	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
2			BAS	E UTILIT	Y									
_	HOTLD	576	520	576	557	576	557	576	576	557	576	557	576	6,780
-	PK	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
1	EQ1010S		2-8	TG CTV<19	90 TONS	W\HT RFC	(95 DEG	HWD	Chiller Cl	H-1				
	ELEC	65518	59177	65518	63404	65518	63404	65518	65518	63404	65518	63404	65518	771,420
	PK	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1
1	EQ5100		con	LING TOW	ER FANS	Twr.	Fan CT-1	Α						
•	ELEC	0	0	0	49	999	4581	7862	7845	4871	358	0	0	26,565
~	PK	0.6	0.8	1.0	3.2	7.4	12.5	12.5	12.5	12.5	4.8	0.7	0.6	12.5

			• • • • • • • • • • • • • • • • • • • •	E G	UIPI	MENT	ENER	G Y C	ONSt	JMPT:	I O N		• • • • • • • • • • • • • • • • • • • •	•••••
Ref	Equip					Mont	hiv Cons	umption						
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
1	EQ5100		COOL	ING TOWE	R FANS									
	WATER	43	41	49	49	56	58	58	60	53	52	43	43	605
	PK	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1	EQ5001		CHIL	LED WATE	R PUMP	- CONSTA	NT VOLU	CHV	V Pump P	-7				
	ELEC	29239	26410	29239	28296	29239	28296	29239	29239	28296	29239	28296	29239	344,268
	PK	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3
1	EQ5010		CONE	DENSER WA	TER PUMI	P-CV(HIGH	EFFIC.	CNDF	ump 10A					
	ELEC	20460	18480	20460	19800	20460	19800	20460	20460	19800	20460	19800	20460	240,900
	PK	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
1	EQ5300	ł	CONT	ROL PANE	EL & INTI	ERLOCKS		w. mm		1.0000				
	ELEC	744	672	744	720	744	720	744	744	720	744	720	744	8,760
	PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1	EQ5020		HFA1	TING WATE	R CIRCU	LATION PL	IMP	HW pump	P-5					
•	ELEC	12350	11155	12350	11952	12350	11952	12350	12350	11952	12350	11952	12350	145,416
	PK	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6
3	EQ1010S		2 6	FC CTV-10	O TONE	IN UT DEC	OF DEC. 1	Chi	ller CH-3				L	
2	ELEC	31096	30001	35815	38216	W\HT REC(44162	47699	53101	52555	44221	39656	32051	31977	480,549
	PK	48.4	57.7	62.7	68.6	75.3	86.7	94.0	92.0	81.6	68.9	57.6	55.5	94.0
		1					an CT-18							,,,,
2	EQ5100		COOL	ING TOW	R FANS	1 441. [an C1-16	•						,
	ELEC	3028	3088	3838	4417	5630	6985	8018	7973	6912	4873	3221	3182	61,165
	PK	5.4	6.9	7.1	8.8	10.8	10.8	10.8	10.8	10.8	9.4	6.4	6.5	10.8
2	EQ5100		COOL	LING TOWE	R FANS									
	WATER	155	153	186	201	236	252	274	272	233	209	163	161	2,496
	PK	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.3	0.3	0.5
2	EQ5001		CHI	LLED WATE	ER PUMP	- CONST	ANT VOLU	1E						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
								CND	Pump 10	В				•
2	EQ5010	47/45				P-CV(HIG		,			47.4-			140 700
	ELEC	13615	12298	13615	13176	13615	13176	13615	13615	13176	13615	13176	13615	160,308
	PK	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3
2	EQ5300		CON	TROL PANE	EL & INT	ERLOCKS								
	ELEC	744	672	744	720	744	720	744	744	720	744	720	744	8,760
**	PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

				E C	UIPN	1 E N T	ENE	RGY (ONSU	JMPTI	ON			
Ref	Equip					· Moni	thly Con	sumption						
	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
1	EQ4003		FC C	ENTRIFUG	AL - CON	ISTANT VO	OLUME	Fan AH1						3
	ELEC	4836	4368	4836	4680	4836	468đ	4836	4836	4680	4836	4680	4836	56,940
	PK	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
1	EQ4003		FC (ENTR I FUO	GAL - CON	ISTANT VO	OLUME	Fan EF-	1					
	ELEC	893	806	893	864	893	864	893	893	864	893	864	893	10,512
	PK	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
1	EQ4003		FC (ENTRI FUO	AL - CON	STANT V	OLUME	Fan AHS1						 ,
	ELEC	186	168	186	180	186	180	186	186	180	186	180	186	2,190
	PK	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
2	EQ4003		FC (ENTRI FUO	GAL - COM	STANT V	OLUME	Fan Al	12					
	ELEC	7589	6854	7589	7344	7589	7344	7589	7589	7344	7589	7344	7589	89,352
	PK	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
2	EQ4003		FC (ENTR I FUC	GAL - CON	STANT V	OLUME	Fan Al	HS1					
	ELEC	485	438	485	469	485	469	485	485	469	485	469	485	5,712
	PK	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
3	EQ4003		FC (CENTRIFUC	SAL - CON	STANT V	OLUME	Fan AH	13					
	ELEC	4836	4368	4836	4680	4836	4680	4836	4836	4680	4836	4680	4836	56,940
	PK	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
3	EQ4003		FC (CENTRIFUC	SAL - CO	NSTANT V	OLUME	Fan Al-	IS1					
	ELEC	309	279	309	299	309	, 299	309	309	299	309	299	309	3,635
	PK	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
4	EQ4003	,	FC (CENTRIFUC	GAL - CO	NSTANT V	OLUME	Fan Al-	15					,
	ELEC	12871	11626	12871	12456	12871	12456	12871	12871	12456	12871	12456	12871	151,548
	PK	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
4	EQ4003		FC (CENTRI FU	SAL - CO	NSTANT V	OLUME	Fan Al	HS1					
•	ELEC	911	823	911	882	911	882	911	911	882	911	882	911	10,731
	PK	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
5	EQ4003		FC (CENTRIFU	SAL - COL	USTANT V	OLLIME	Fan A	H6		***	<u>i</u>		
,	ELEC	10342	9341	10342	10008	10342	10008	10342	10342	10008	10342	10008	10342	121,764
	PK	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9
5	EQ4003		EC /	CENTRIFU	CAL - CO	NCTANT W	OLUME	Fan El						
ر	ELEC	2009	1814	2009	1944	2009	1944	2009	2009	1944	2009	1944	2009	23,652
-	PK	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
		<u> </u>												

				E Q	UIPN	1 E N T	ENEF	RGY C	0 N S L	IMPTI	ON	• • • • • • • • • • • • • • • • • • • •	·	
Ref	Equip		·			Mont	hly Cons	sumption						
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
5	EQ4003		FC (ENTR I FUG	AL - CON	ISTANT VO	DLUME	Fan	AHS1					
	ELEC	136	123	136	131	136	131	136	136	131	136	131	136	1,598
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
6	EQ4003	-	FC (CENTRIFUG	AL - CON	ISTANT VO	DLUME	Fan	AH7					
	ELEC	5506	4973	5506	5328	5506	5328	5506	5506	5328	5506	5328	5506	64,824
	PK	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
6	EQ4003		FC C	ENTR I FUG	AL - CON	ISTANT VO	DLUME	Fan	AHS1					<u> </u>
	ELEC	. 386	349	386	374	386	374	386	386	374	386	374	386	4,546
	PK	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
7	EQ4003	1	FC C	ENTRIFUG	AL - CON	STANT VO	LUME	Fan A	N-8					_1
	ELEC	2455	2218	2455	2376	2455	2376	2455	2455	2376	2455	2376	2455	28,908
	PK	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
8	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME	Fan A	NH-9					
	ELEC	4166	3763	4166	4032	4166	4032	4166	4166	4032	4166	4032	4166	49,056
	PK	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
o	EQ4003		rc r	ENTRIFUG				Fan AH	-10					
,	ELEC	1339	1210	1339	AL - CON 1296			1770	1770	4207	4770	4507	477-4	
	PK	1.8	1.8	1.8	1.8	1339	1296	1339	1339	1296 1.8	1339	1296	1339	15,768
		1					1.0			1.0	1.0	1.0	1.8	1.8
10	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME	Fan A	H-11A					
	ELEC	2753	2486	2753	2664	2753	2664	2753	2753	2664	2753	2664	2753	32,412
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
11	EQ4003		FC C	ENTR I FUG	AL - CON	STANT VO	LUME	Fan AF	I-11B					
	ELEC	3497	3158	3497	3384	3497	3384	3497	3497	3384	3497	3384	3497	41,172
	PK	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
12	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME	Fan AH	-12					
	ELEC	2455	2218	2455	2376	2455	2376	2455	2455	2376	2455	2376	2455	28,908
	PK	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	. 3.3	3.3	3.3	3.3
13	EQ4003		FC C	ENTRI FUG	AL - CON	STANT VO	LUME -	Fan AH-	14	_			I	,
	ELEC	4166	3763	4166	4032	4166	4032	4166	4166	4032	4166	4032	4166	49,056
	PK	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
13	EQ4003		FC C	ENTRIFUG.	AL - CON	STANT VO	LUME	Fan A	HS1					_
	ELEC	116	105	116	112	116	112	116	116	112	116	112	116	1,367
	PK	0.2	0.2	0.2	0.2	.0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

lef	Equip					Mont	hly Cons	sumption		· • • • • • • • • • • • • • • • • • • •				
łum	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
								Fan AH	IS4					
14	EQ4003	44000		ENTRI FUG				4/000	44000		4/000	4/7//	1/000	100.053
	ELEC PK	16889	15254	16889	16344	16889	16344 22.7	16889	16889	16344	16889	16344	16889	198,852
	r K													22.1
1	E02002		GAS	FIRED ST	EAM BOIL	ER								
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5020		HFAT	ING WATE	R CIRCUI	ATION PL	IMP							
•	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5240		ROIL	ER FORCE	D DRAFT	FAN								
•	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5307		CONT	ROLS										
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5061		COND	ENSATE R	ETURN PL	IMP (HIGH	H EFFICII	ENCY)						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5406		MAKE	-UP WATE	R									
	WATER	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ2002		GAS	FIRED ST	EAM BOIL	.ER								
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5020		HEAT	TING WATE	R CIRCUL	ATION P	UMP							
	ELEC	0.	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	. 0.0
2	EQ5240		BOIL	ER FORCE	D DRAFT	FAN	~							•
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5307		CONT	TROLS										
_	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
•	PK	0.0	0.0	0.0	0.0	.0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 3 EXISTING SECONDARY EQUIPMENT AND SYSTEMS

------SYSTEM LOAD PROFILE------

ECO-B, LSTC BUILDING

System Totals

Perce	ent	Cool	ing Loa	d	Heatin	ng Load		Cooling	Airflow		Heating	Airflow	
Desi	gn	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Lo	ad	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
0 -	5	11.5	0	0	-169,241	0	0	10,171.0	0	0	0.0	0	0
5 -	10	23.1	0	0	-338,482	0	0	20,342.1	0	0	0.0	0	0
10 -	15	34.6	0	0	-507,723	0	0	30,513.2	0	0	0.0	0	0
15 -	20	46.2	0	0	-676,964	0	0	40,684.2	0	0	0.0	0	0
20 -	25	57.7	0	0	-846,205	. 0	0	50,855.3	0	0	0.0	0	0
25 -	30	69.3	0	0	-1,015,446	19	1,684	61,026.3	0	0	0.0	0	0
30 -	35	80.8	0	0	-1,184,687	39	3,419	71,197.4	0	0	0.0	0	0
35 -	40	92.3	0	0	-1,353,928	42	3,657	81,368.4	0	0	0.0	0	0
40 -	45	103.9	0	0	-1,523,169	0	0	91,539.5	O	0	0.0	0	0
45 -	50	115.4	0	0	-1,692,410	0	0	101,710.5	0	0	0.0	0	0
50 -	55	127.0	0	0	-1,861,651	0	0	111,881.6	0	0	0.0	0	0
55 -	60	138.5	17	1,513	-2,030,892	0	0	122,052.6	0	0	0.0	0	0
60 -	65	150.0	29	2,523	-2,200,133	0	0	132,223.7	0	0	0.0	0	0
65 -	70	161.6	17	1,469	-2,369,374	0	0	142,394.7	0	0	0.0	0	0
70 -	75	173.1	21	1,797	-2,538,615	0	0	152,565.8	0	0	0.0	0	0
75 -	80	184.7	12	1,093	-2,707,856	0	0	162,736.8	0	0	0.0	0	. 0
80 -	85	196.2	4	365	-2,877,097	0	0	172,907.9	0	0	0.0	0	0
85 -	90	207.8	0	0	-3,046,339	0	0	183,078.9	0	0	0.0	0	0
90 -	95	219.3	0	0	-3,215,579	0	0	193,250.0	0	0	0.0	0	0
95 -	100	230.8	0	0	-3,384,820	0	0	203,421.0	100	8,760	0.0	0	0
Hours	off	0.0	0	0	0	0	0	0.0	0	0	0.0	0	8,760

		·		E	QUIP	MENT	ENE	RGY	CONS	UMPT	I O N			
Ref	Equip					Mon	thly Con	sumption		 -				
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS	Lighting	Systems											
	ELEC	31826	28759	32604	30674	32215	31452	31437	32604	30674	32215	30674	31437	376,570
	PK	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8
1	MISC LD													
·	ELEC	26931	24324	26931	26062	26931	26062	26931	26931	26062	26931	26062	26931	717 005
	PK	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	317,085 72.4
													16.4	, 2, 4
2	MISC LD					•								.*
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MISC LD													
7	P STEAM	0	0	0	0	0	0	0	0	0	•		•	•
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 0.0	0.0	0 0.0	0 0.0
								0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH20	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1			BASE	E UTILIT	ŕ									
•	CHILLD	3452	3118	3452	3341	3452	3341	3452	3452	3341	3452	3341	3452	40,646
	PK	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
2			BASE	E UTILIT	,									
_	HOTLD	576	520	576	557	576	557	576	576	557	576	557	576	6,780
	PK	0.8	0.8	8.0	0.8	8.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
1	EQ1010S		2-61	[G CTV < 10	י פעחד חכ	J/HI DEC	95 DEG 1	Chille	r CH-1					
•	ELEC	65518	59177	65518	63404	65518	63404	65518	65518	63404	65518	63404	65518	771 /20
	PK	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	771,420 88.1
1	EQ5100		COOL	ING TOW	ER FANS	Twr. Far	CT-1A	· · · · · · · · · · · · · · · · · · ·						
	ELEC	0	0	0	19	688	4288	7648	7643	4593	180	0	0	25,060
	PK	0.6	0.8	1.0	3.2	7.4	12.5	12.5	12.5	12.5	4.8	0.7	0.6	12.5

				E G	UIPI	MENT	ENER	RGY (CONSU	ЈМРТ:	1 O N			• • • • • • • • • • • • • • • • • • • •
Ref	Equip					Mon1	thly Cons	sumption						
lum	Code	Jan	Feb	Mar	Арг	May	June	July	Aug	Sep	0ct	Nov	Dec	Total
1	EQ5100		COOL	ING TOWE	R FANS									
	WATER	27	27	34	35	41	44	43	45	38	37	28	27	427
	PK	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1	EQ5001		CHII	LLED WATE	R PUMP	- CONST	ANT VOLUM	1E CHW	/ Pump P-	7				
	ELEC	29239	26410	29239	28296	29239	28296	29239	29239	28296	29239	28296	29239	344,268
	PK	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3
1	EQ5010		CONI	DENSER WA	ATER PUM	P-CV(HIGI	H EFFIC.	CNDF	ump 10A					r
	ELEC	20460	18480	20460	19800	20460	19800	20460	20460	19800	20460	19800	20460	240,90
	PK	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.
1	EQ5300		CON.	TROL PANE	: 8: INT	EDI UCKS								
•	ELEC	744	672	744	720	744	720	744	744	720	744	720	744	8,76
	PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.
	FK	1.0								1.0	1.0	1.0	1.0	
1	EQ5020	40750				LATION PO								1
	ELEC	12350	11155	12350	11952	12350	11952	12350	12350	11952	12350	11952	12350	145,41
	PK	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.
2	EQ1010S		2-5	TG CTV<19	O TONS	W\HT REC	(95 DEG 1	נאר	er CH-3					ſ
	ELEC	29769	28492	33642	35825	41578	44948	49987	49537	41532	37184	30454	30582	453,52
	PK	47.6	54.3	62.7	68.6	75.3	86.7	94.0	92.0	81.6	68.9	57.6	52.0	94.
2	EQ5100		coo	LING TOW	ER FANS	Twr. Far	CT-1B							r
	ELEC	2717	2778	3432	4037	5322	6860	7975	7929	6760	4504	2884	2868	58,06
	PK	5.3	6.2	7.1	8.8	10.8	10.8	10.8	10.8	10.8	9.4	6.4	6.0	10.
2	EQ5100		C00	LING TOW	ER FANS				-					
	WATER	147	143	172	187	221	237	258	256	218	194	153	152	2,33
	PK	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.3	0.3	0.
2	EQ5001		CHI	LLED WATE	ER PUMP	- CONST.	ANT VOLUI	ME						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	~0.0	0.0	0.0	0.0	0.0	0.
				•			•••							
2	EQ5010		CON	DENSER W	ATER PUM	P-CV(HIG	H EFFIC.) CND	Pump 10B	5				
	ELEC	13615	12298	13615	13176	13615	13176	13615	13615	13176	13615	13176	13615	160,30
	PK	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.
2	EQ5300		CON	TROL PAN	EL & INT	ERLOCKS								
	ELEC	744	672	744	720	744	720	744	744	720	744	720	744	8,76
-	PK	1.0	1.0	1.0	1.0	.1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.

				· E 0	UIPI	4 E N T	ENE	RGY C	оиѕи	MPTI	O N		• • • • • • • • • • • • • • • • • • • •	
Ref	Equip					Mont	thly Con	sumption						
	Code	Jan	Feb	Mar	Арг	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
1	EQ4003		EC (ENTRIFIE	או - רחי	NSTANT VO	NILIME F	an AH1						
•	ELEC	4836	4368	4836	4680	4836	4680	4836	4836	4680	4836	4680	4836	56,940
	PK	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
1	EQ4003		FC (ENTRIFU	:AI - COI	NSTANT VO	HUME F	an EF-1						
•	ELEC	893	806	893	864	893	864	893	893	864	893	864	893	10,512
	PK	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
		L						Fan AHS1						
1	EQ4003	404				NSTANT VO								<u> </u>
	ELEC	186	168	186	180	186	180	186	186	180	186	180	186	2,190
	PK	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
2	EQ4003		FC (CENTRIFUC	SAL - CO	NSTANT VO	DLUME F	an AH2						[]
	ELEC	7589	6854	7589	7344	7589	7344	7589	7589	7344	7589	7344	7589	89,352
	PK	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
2	EQ4003		FC (CENTRIFUC	SAL - CO	NSTANT VO	OLUME	Fan AHS1						
	ELEC	485	438	485	469	485	469	485	485	469	485	469	485	5,712
	PK	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
-	50/007	+					F	an AH3		•	· · · · · · · · · · · · · · · · · · ·			
3	EQ4003	1074				NSTANT VO		/07/	/07/		/07/	//00		F(0(0
	ELEC PK	4836	4368 6.5	4836 6.5	4680 6.5	4836 6.5	4680	4836 6.5	4836	4680 6.5	4836 6.5	4680	4836 6.5	56,940
	r K	1 0.5			0.5				.0.5		0.5	0.5		6.3
3	EQ4003		FC (CENTRIFUC	GAL - CO	NSTANT VO	DLUME F	an AHS1						[<u>1</u>
	ELEC	309	279	309	299	309	299	_309	309	299	309	299	309	3,635
	PK	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
4	EQ4003		FC (CENTRIFUC	SAL - CO	NSTANT VO	DLUME F	an AH5						
•	ELEC	12871	11626	12871	12456		· 12456	12871	12871	12456	12871	12456	12871	151,548
	PK	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
								Fan AHS1						
4	EQ4003	011				NSTANT VO	DEGINE		044		044		244	40 774
-	ELEC	911	823	911	882	911	882	911	911	882	911	882	911	10,731
	PK	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
5	EQ4003		FC (CENTRI FUO	GAL - CO	NSTANT VO	OLUME F	an AH6						
	ELEC	10342	9341	10342	10008	10342	10008	10342	10342	10008	10342	10008	10342	121,764
	PK	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9
5	EQ4003		FC (PENTE ! FILE	:ΔI - CO	NSTANT V	OI UME	Fan EF-2						
,	ELEC	2009	1814	2009	1944	2009	1944	2009	2009	1944	2009	1944	2009	23,652
**	PK	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7

		·		E Q	UIPM	ENT	ENER	G Y C	ONSU	MPTI	O N			
≀ef	Equip -				• • • • • • • •	Mont	hly Cons	umption						
ium	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
5	EQ4003		FC C	ENTRIFUG.	AL - CON	STANT VO	LUME F	an AHS1						
	ELEC	136	123	136	131	136	131	136	136	131	136	131	136	1,598
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
6	EQ4003		FC C	ENTRIFUG.	AI - CON	STANT VO	IIIME F	an AH7						
Ī	ELEC	5506	4973	5506	5328	5506	5328	5506	5506	5328	5506	5328	5506	64,824
	PK	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
4	EQ4003		EC C	ENTRIFUG.	AI - CON	STANT VO	iline F	an AHS1						
O	ELEC	386	349	386	AL - CON 374	386	374	386	386	374	386	374	386	4,546
	PK	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		<u></u>												
7	EQ4003			ENTRIFUG.	AL - CON	STANT VO	LUME '	Fan AH-8						
	ELEC	2455	2218	2455	2376	2455	2376	2455	2455	2376	2455	2376	2455	28,908
	PK	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
8	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME F	an AH-9						
	ELEC	4166	3763	4166	4032	4166	4032	4166	4166	4032	4166	4032	4166	49,056
	PK	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
0	EQ4003	ŕ	FC C	ENTR I FUG.	AI - CON	STANT VO	ILUME F	an AH-10						
•	ELEC	1339	1210	1339	1296	1339	1296	1339	1339	1296	1339	1296	1339	15,768
	PK	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
10	50/007	1	F0 0		N. 0011		F	an AH-11		*				
10	EQ4003	2757		ENTRIFUG.			LUME			2444	2757	2///	2757	72 /42
	ELEC PK	2753	2486 3.7	2753 3.7	3.7	2753 3.7	2664 3.7	2753	2753	2664 3.7	2753 3.7	2664 3.7	2753 3.7	32,412
		1		· · · · · · · · · · · · · · · · · · ·										
11	EQ4003		FC C	ENTRIFUG.	AL - CON	STANT VO	LUME F	an AH-11	Б					
	ELEC	3497	3158	3497	3384	3497	3384	3497	3497	3384	3497	3384	3497	41,172
	PK	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
12	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME F	an AH-12						
	ELEC	2455	2218	2455	2376	2455	2376	2455	2455	2376	2455	2376	2455	28,908
	PK	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
17	EQ4003		בר ר	ENTRIFUG	۸۱ - ۲۵۰	STANT VO	ILLIME E	an ΔЫ 14						
	ELEC	4166	3763	4166	4032	4166	4032	4166	4166	4032	4166	4032	4166	49,056
	PK	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
		<u> </u>						an AHS1						
13	EQ4003			ENTR I FUG			LUME							
٠.	ELEC	116	105	116	112	116	112	116	116	112	116	112	116	1,367
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Ref	Equip					Mon1	thly Cons	sumption		· · · · · · · ·				
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
14	EQ4003		FC (CENTR I FUG	AL - CON	ISTANT VO	DLUME !	Fan AHS4	•					
•	ELEC	16889	15254	16889	16344	16889	16344	16889	16889	16344	16889	16344	16889	198,852
	PK	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
1	EQ2002		GAS	FIRED ST	EAM BOIL	.ER								
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5020		HEA.	TING WATE	R CIRCUL	ATION PL	JMP							
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5240		BOI	LER FORCE	D DRAFT	FAN								
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5307		CON.	TROLS										
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	C
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5061		CONI	DENSATE R	ETURN PL	JMP (HIG	H EFFICI	ENCY)						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	C
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5406		MAK	E-UP WATE	R									
	WATER	0	0	0	0	0	0	0	0	0	0	0	0	O
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ2002		GAS	FIRED ST	EAM BOIL	.ER								
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	C
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5020		HEA	TING WATE	R CIRCU	ATION P	UMP							
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	C
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5240		BOI	LER FORCE	D DRAFT	FAN								
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	C
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5307		CON	TROLS										
,	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	(
	PK	0.0	0.0	0.0	0.0	.0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 4 EXISTING SECONDARY EQUIPMENT AND SYSTEMS

ECO-C, LSTC BUILDING

System Totals

Percent	Cool	ing Loa	d	Heatin	ng Load		Cooling	Airflow		Heating	Airflow	
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
۰		^	^	70.040	77	/ 710	40 474 0		•	0.0	•	•
0 - 5	6.5	0	0	-79,960	77	6,718	10,171.0	0	0	0.0	0	U
5 - 10	12.9	0	0	-159,919	19	1,678	20,342.1	0	0	0.0	0	0
10 - 15	19.4	0	0	-239,879	4	316	30,513.2	0	0	0.0	0	0
15 - 20	25.9	0	0	-319,838	1	48	40,684.2	0	0	0.0	0	0
20 - 25	32.3	55	4,792	-399 , 798 ⁻	0	0	50,855.3	0	0	0.0	0	0
25 - 30	38.8	1	47	-479,757	0	0	61,026.3	0	0	0.0	0	0
30 - 35	45.3	3	305	-559,717	0	0	71,197.4	0	0	0.0	0	0
35 - 40	51.8	0	35	-639,677	0	0	81,368.4	0	0	0.0	0	0
40 - 45	58.2	0	12	-719,636	0	0	91,539.5	0	0	0.0	0	0
45 - 50	64.7	1	61	-799,596	0	0	101,710.5	0	0	0.0	0	0
50 - 55	71.2	1	64	-879,555	0	0	111,881.6	54	4,771	0.0	0	0
55 - 60	77.6	2	133	-959,515	0	0	122,052.6	1	64	0.0	0	0
60 - 65	84.1	3	306	-1,039,475	0	0	132,223.7	2	175	0.0	0	0
65 - 70	90.6	3	293	-1,119,434	0	0	142,394.7	2	173	0.0	0	0
70 - 75	97.0	3	295	-1,199,394	0	0	152,565.8	1	90	0.0	0	0
75 - 8 0	103.5	- 5	447	-1,279,353	0	0	162,736.8	1	61	0.0	0	0
80 - 85	110.0	3	282	-1,359,313	0	0	172,907.9	0	38	0.0	0	0
85 - 90	116.5	4	361	-1,439,272	0	0	183,078.9	1	103	0.0	0	0
90 - 95	122.9	6	523	-1,519,232	0	0	193,250.0	0	0	0.0	0	0
95 - 100	129.4	9	804	-1,599,192	0	0	203,421.0	38	3,285	0.0	0	0
Hours Off	0.0	0	0	0	0	0	0.0	0	0	0.0	0	8,760

	Equip ·		rah		۸		-	•			0-+	Nav	Dag	Tabal
m	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS	Lighting	Systems											
	ELEC	31826	28759	32604	30674	32215	31452	31437	32604	30674	32215	30674	31437	376,570
	PK	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8
1	MISC LD													
	ELEC	26931	24324	26931	26062	26931	26062	26931	26931	26062	26931	26062	26931	317,085
	PK	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	(
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	(
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	(
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD				•									
	Р НОТН2О	0	0	0	0	0	0	0	O	0	0	0	0	(
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	(
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1			BASE	E UTILIT	Y									
	CHILLD	3452	3118	3452	3341	3452	3341	3452	3452	3341	3452	3341	3452	40,64
	PK	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.0
2			BASE	E UTILIT	Y									
	HOTLD	576	520	576	557	576	557	576	576	557	576	557	576	6,78
	PK	0.8	0.8	0.8	0.8	0.8	0.8	8.0	0.8	8.0	8.0	0.8	0.8	0.
1	EQ1010S		2-s ⁻	TG CTV<1	90 TONS	W\HT REC	(95 DEG	HW) Chil	ller CH-1					
	ELEC	39290	37012	41568	40819	42332	41343	42697	42831	41029	42189	39846	40952	491,90
	PK	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.
1	EQ5100		C00	LING TOW	ER FANS	Twr. Fa	ın CT-1A							
_	ELEC	2074	2106	2442	2592	3689	5873	8577	8693	6878	3225	2264	2349	50,76
	PK	8.3	8.6	8.6	9.8	1.1.7	12.5	12.5	12.5	12.5	10.5	8.7	8.6	12.

Ref Equip Num Code Jan Feb Mar Apr May June Jule		• • • • • • • • • • • • • • • • • • • •			E	qıuq	MENT	ENE	RGY	CONS	UMPT	I O N			
Num Code Jan Feb Mar Apr May June July	Ref	Equip	• • • • • • • •				Mon	thiv Con	sumntion						
MATER 130 126 143 142 148 745 150 151 144 147 135 138 1,701 PK 0.3 0	Num		Jan	Feb	Mar							0ct	Nov	Dec	Total
PK 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	1	EQ5100		COO	LING TOW	ER FANS									
PK 0.3		WATER	130	126	143	142	148	145	150	151	144	147	135	138	1 701
ELEC 29239 26410 29239 28296 29239 28296 29239 28296 29239 28296 29239 39.3 39.3 39.3 39.3 39.3 39.3 39.		PK	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3					•
PK 39.3 39.3 39.3 39.3 39.3 39.3 39.3 39.	1	EQ5001		CHI	LLED WATE	ER PUMP	- CONST	ANT VOLU	HE CHV	√ Pump P-	-7				
PK 39.3 39		ELEC	29239	26410	29239	28296	29239	28296	29239	29239	28296	29239	28296	29239	344.268
ELEC 20460 19480 20460 19800 20460 19800 20460 20460 19800 20460		PK	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3				
ELEC 20460 18480 20460 19800 20460 19800 20460 19800 20460 19800 20460 19800 20460 20460 19800 20460 20460 19800 20460 19800 20460 20460 19800 20460 1	1	EQ5010		CON	DENSER W	ATER PUMI	P-CV(HIG	H EFFIC.	CNDF	Pump 10A					
PK 27.5		ELEC	20460	18480	20460	19800	20460	19800	20460	20460	19800	20460	19800	20460	240 900
ELEC 744 672 744 720 744 720 744 720 744 740 740 744 740 740 744 740 740 744 740		PK	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5					
ELEC 744 672 744 720 744 720 744 720 744 74 720 744 744 720 744 720 744 8,760 PK 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	1	EQ5300		CONT	FROL PANE	L & INTE	ERLOCKS								
PK 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0		ELEC	744					720	744	744	720	744	720	744	8 760
ELEC		PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0						· ·
ELEC	1	EQ5020		HEAT	ING WATE	R CIRCUI	ATION PI	IMP HW	pump P-	5					
PK		ELEC	5661						5661	5661	5478	5661	5/.78	5441	44.440
ELEC 620 2622 4756 6180 8648 9406 9892 9999 8505 6867 3175 2541 73,212 22.5 23.5 27.9 32.3 34.5 37.0 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 2.9 29.1 286 35.4 3.6 27.1 39.3 39.3 39.1 36.3 39.3 39.1 36.9 33.1 27.9 25.4 28.5 28.0 39.3 29.1 28.6 36.0 30.0 30.0 30.0 30.0 30.0 30.0 30		PK	16.6	16.6											
ELEC 620 2622 4756 6180 8648 9406 9892 9999 8505 6867 3175 2541 73,212 22.5 23.5 27.9 32.3 34.5 37.0 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.3 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 39.1 36.9 33.1 27.9 23.6 39.9 39.3 2.9 29.1 286 35.4 3.6 27.1 39.3 39.3 39.1 36.3 39.3 39.1 36.9 33.1 27.9 25.4 28.5 28.0 39.3 29.1 28.6 36.0 30.0 30.0 30.0 30.0 30.0 30.0 30	2	EQ1010S		2-51	'G CTV<10	O TONS I	IVUT DECA	05 DEC 1	Ch	iller CH-3			-		
PK			620						IW /		8505	4847	7175	25/1	77, 242
ELEC		PK	22.5												
ELEC	2	EQ5100		COOL	ING TOWE	P FANS	Twr. Far	CT-1B							
PK			0				665	2578	2968	2880	1821	100	0	0	11 212
WATER 2 8 18 24 36 41 43 43 36 27 10 8 295 PK 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.2 0.2 0.1 0.1 0.1 0.1 2 EQ5001		PK	0.0	0.0	0.0										
WATER 2 8 18 24 36 41 43 43 36 27 10 8 295 PK 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.2 0.1 0.1 0.1 0.1 0.2 2 EQ5001 CHILLED WATER PUMP - CONSTANT VOLUME CHILLED WATER PUMP - CONSTANT VOLUME 0.0 0 <td>2</td> <td>EQ5100</td> <td></td> <td>0001</td> <td>ING TOWE</td> <td>R FANS</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>}</td> <td></td>	2	EQ5100		0001	ING TOWE	R FANS								 }	
PK 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.2 0.2 0.1 0.1 0.1 0.2 0.2 2 EQ5001		WATER	2				36	41	43	43	36	27	10	Ω	205
ELEC 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		PK	0.1	0.1											
ELEC 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2	EQ5001		CHII	IFD WATE	R PUMP -	CONSTA	אוד ערוויש	ı <u> </u>						
PK 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.			0							n	n	0	0	0	•
ELEC 933 2855 3861 5051 5435 5344 5472 5527 5325 5234 2855 2800 50,691 PK 18.3 <		PK	0.0	0.0											
ELEC 933 2855 3861 5051 5435 5344 5472 5527 5325 5234 2855 2800 50,691 PK 18.3 <	2	EQ5010		СОИО	ENSER WA	TER PIIMO	-CV(N164	FEETC >	CND P	ump 10B					
PK 18.3 18.3 18.3 18.3 18.3 18.3 18.3 18.3			933								5325	523/	2955	2800	50,401
2 EQ5300 CONTROL PANEL & INTERLOCKS ELEC 51 156 211 276 297 292 299 302 291 286 156 153 2,770															
ELEC 51 156 211 276 297 292 299 302 291 286 156 153 2,770	2	£05300		CONT	ם חו חויים	1 9 11175	DI OCKO								
27 20 130 133 2,770	-		51					ວດວ	200	700	204	201	454	45~	
	-														

				E Q	UIPM	ENT	ENER	R G Y C	ONSU	мрт 1	O N			
Ref	Equip					Mont	hly Cons	sumption						
	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
1	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME	Fan AH1						7
	ELEC	1849	1744	1947	1882	1948	1890	1934	1954	1882	1942	1863	1927	22,762
	PK	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
1	EQ4223		FC F	AN W\VAR	IABLE SP	EED DRIV	E Fan	AHS1						r
	ELEC	1	0	0	0	0	0	0	0	0	0	0	0	3
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003	ı	FC C	ENTR I FUG	AL - CON	STANT VO	LUME F	an EF-1						·
	ELEC	335	326	362	349	361	350	359	362	349	360	347	361	4,223
	PK	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
2	EQ4003	•	FC C	CENTRIFUG	AL - CON	STANT VO	LUME F	an AH2						
	ELEC	2910	2821	3395	3335	3466	3355	3463	3467	3349	3461	3341	3444	39,807
	PK	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
2	EQ4223	<u> </u>	EC E	AN W\VAR	TARLE SD	EED DOIN	Fan	AHS1						
_	ELEC	182	172	175	95	61	1	1	1	59	101	209	214	1,270
	PK	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6
7	EQ4003	}	50.0	ENTR I FUG	AL - CON	CTANT VO	Fa	an AH3						
3	ELEC	1814	1638	.ENIK1FUG 1814	1755	1814	1,755	1814	1814	1755	1814	1755	1814	21,352
	PK	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
_		 					Fan	AH\$1						
3	EQ4223	115		AN W\VAR			'E			27	50	442	445	700
	ELEC PK	0.4	0.4	0,4	0.4	0.4	0.0	0.0	0.0	0.4	0.4	0.4	0.4	708
	-		,											
4	EQ4003			CENTRIFUG	AL - CON	STANT VO	DLUME F	an AH5						
	ELEC	4827	4360	4843	4714	4928	4812	4944	4976	4789	4928	4696	4828	57,644
	PK	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
4	EQ4223		FC F	FAN W\VAR	IABLE SP	EED DRIV	/ε Fan	AHS1						<u> </u>
	ELEC	341	308	305	156	89	17 ·	17	17	105	161	330	341	2,186
	PK	1.2	1.2	1.2	1.2	1.2	0.1	0.1	0.1	1.2	1.2	1.2	1.2	1.2
5	EQ4003		FC (CENTRIFUG	AL - CON	STANT VO	DLUME F	an AH6		•				
	ELEC	3933	3670	4079	3952	4142	4077	4200	4225	4069	4178	3929	4063	48,515
	PK	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9
5	EQ4223		FC I	FAN W\VAR	TARLE SE	PEED DRIV	_{/F} Fan	AHS1						
,	ELEC	4	70	102	53	72		2	2	70	50	47	6	480
-	PK	0.2	0.8	0.8	0.8	.0.8	0.3	0.3	0.3	0.8	0.8	0.8	0.8	0.8
		1												

Ref	Equip			 .		Mont	hly Cons	umption						
	Code	Jan	Feb	Mar	Арг	May	June	July	Aug	Sep	Oct	Nov	Dec	Tota
								an EF-2						
5	EQ4003	77.7		ENTRIFUG			LUME				•••	710	767	
	ELEC	753	680	753	729	791	788	807	815	786	804	740	753	9,2
	PK	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2
6	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME F	an AH7						
	ELEC	2094	1865	2065	2116	2217	2294	2368	2405	2153	2190	1998	2065	25,8
	PK	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7
,	F0/337	,	50.5	AH 13337AG	14015.00	550 00111	- Fan	4HS1						
0	EQ4223 ELEC	146	130	AN W\VAR 129	75	יבצט טאוע 50	9	9	10	/ 0	77	140	1//	
	PK	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.5	77 0.5	140 0.5	0.5	0
	r K	[0.5				0.5	0.0			0.5		0.5	0.5	v
7	EQ4003		FC C	ENTRIFUG	AL - CON	ISTANT VO	LUME	Fan AH-8						r
	ELEC	2455	2218	2455	2376	2455	2376	2455	2455	2376	2455	2376	2455	28,9
	PK	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3
	50/007	,					6	an AH-9						
8	EQ4003 ELEC	4166	3763	ENTRIFUG 4166	4032				/144	/072	/144	4032	4166	49,0
	PK	5.6	5.6	5.6	5.6	4166 5.6	4032 5.6	4166 5.6	4166 5.6	4032 5.6	4166 5.6	5.6	5.6	5
		1 3.0												,
9	EQ4003		FC C	ENTR I FUG	AL - CON	STANT VO	LUME F	an AH-10						
	ELEC	1339	1210	1339	1296	1339	1296	1339	1339	1296	1339	1296	1339	15,7
	PK	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1
10	EQ4003		EC C	ENTRIFUG	A! - CON	ISTANT VO	HIME F	an AH-11A						
	ELEC	2753	2486	2753	2664	2753	2664	2753	2753	2664	2753	2664	2753	32,4
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3
								F Att 44						
11	EQ4003			ENTR I FUG			LOME	Fan AH-11						
	ELEC	3497	3158	3497	3384	3497	3384	3497	3497	3384	3497	3384	3497	41,1
	PK	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4
12	EQ4003		FC C	ENTR I FUG	AL - CON	ISTANT VO	LUME F	an AH-12						
	ELEC	2455	2218	2455	2376	2455	2376	2455	2455	2376	2455	2376	2455	28,9
	PK ·	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3
	==100=													•
13	EQ4003			ENTRIFUG				an AH-14		4675		4070	14/1	/0.0
	ELEC	4166	3763	4166	4032	4166	4032	4166	4166	4032	4166	4032	4166	49,0
	PK	[3.8	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5
13	EQ4223		FC F	AN W\VAR	IABLE SP	EED DRIV	E Fan A	AHS1						
	ELEC	116	104	116	112	116	112	116	116	112	116	112	116	1,3
-	PK	0.2	0.2	0.2	0.2	, 0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0

	Equip	lon					•	sumption July			0ct	Nov	Dec	Total
NUIII	Code	Jan	Feb	Mar	Apr	May	June	•	Aug	Sep	000	NOV	Dec	Totat
14	EQ4003		FC (CENTRIFUC	GAL - CO	ISTANT V	OLUME F	an AHS4						
	ELEC	16889	15254	16889	16344	16889	16344	16889	16889	16344	16889	16344	16889	198,852
	PK	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
1	EQ2002		GAS	FIRED S	TEAM BOII	LER								
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5020		HEA.	TING WATE	ER CIRCU	LATION P	UMP							
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5240		BOII	LER FORCE	ED DRAFT	FAN								
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5307		CON	TROLS										
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5061		CON	DENSATE	RETURN P	UMP (HIG	H EFFICI	ENCY)						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5406		MAK	E-UP WAT	ER									
	WATER	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ2002		GAS	FIRED S	TEAM BOI	LER								
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5020			TING WAT										
	ELEC	0	0	0	0	. 0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5240		BOI	LER FORC	ED DRAFT	FAN								
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5307		CON	TROLS										
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	C
	PK	0.0	0.0	0.0	0.0	. 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 1 EXISTING SECONDARY EQUIPMENT AND SYSTEMS

ECO-D, LSTC BUILDING

System Totals

Percent	Cool	ing Loa	d	Heati	ng Load		Cooling	Airflow		Heating	Airflow	
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
0 - 5	5.9	0	0	-54,281	88	1,668	6,618.8	0	0	0.0	0	0
5 - 10	11.9	0	0	-108,562	12	221	13,237.7	0	0	0.0	0	0
10 - 15	17.8	54	4,740	-162,843	0	0	19,856.5	0	0	0.0	0	0
15 - 20	23.7	0	30	-217,124	0	0	26,475.3	0	0	0.0	0	0
20 - 25	29.7	3	250	-271,405	. 0	0	33,094.2	0	0	0.0	0	0
25 - 30	35.6	1	69	-325,686	0	0	39,713.0	0	0	0.0	0	0
30 - 35	41.5	1	46	-379,967	0	0	46,331.8	0	0	0.0	0	0
35 - 40	47.5	1	123	-434,248	0	0	52,950.7	0	0	0.0	0	0
40 - 45	53.4	4	343	-488,529	0	0	59,569.5	0	0	0.0	. 0	0
45 - 50	59.4	2	147	-542,810	0	0	66,188.3	54	4,745	0.0	0	0
50 - 55	65.3	2	175	-597,091	0	0	72,807.2	3	267	0.0	0	0
55 - 60	71.2	3	305	-651,373	0	0	79,426.0	1	99	0.0	0	0
60 - 65	77.2	2	177	-705,654	0	0	86,044.8	1	93	0.0	0	0
65 - 70	83.1	3	259	-759,935	0	0	92,663.7	0	18	0.0	0	0
70 - 75	89.0	4	348	-814,216	0	0	99,282.5	1	53	0.0	0	0
75 - 80	95.0	4	356	-868,497	0	0	105,901.3	1	46	0.0	0	0
80 - 85	100.9	2	200	-922,778	0	0	112,520.2	10	889	0.0	0	0
85 - 90	106.8	4	354	-977,059	0	0	119,139.0	3	271	0.0	0	0
90 - 95	112.8	10	838	-1,031,340	0	0	125,757.8	11	998	0.0	0	0
95 - 100	118.7	0	0	-1,085,621	0	0	132,376.7	15	1,281	0.0	0	0
Hours Off	0.0	0	0	0	0	6,871	0.0	0	0	0.0	0	8,760

				E C	UIPN	1 E N T	ENEF	RGYO	ONSU	JMPTI	O N			
Ref	Equip					Mon1	thly Cons	sumption					·	
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS					Lighting S	Systems							
·	ELEC	31826	28759	32604	30674	32215	31452	31437	32604	30674	32215	30674	31437	376,570
	PK	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8
1	MISC LD													
	ELEC	26931	24324	26931	26062	26931	26062	26931	26931	26062	26931	26062	26931	317,085
	PK	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4
2	MISC LD					,								
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD		,											
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD					_						•	•	•
	P HOTH20	0	0	0	0	0	0	0	0	0	0	0.0	0 0.0	0 0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD					_			_	_		•	•	•
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0 0.0	0 0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1				E UTILIT									7.50	10.444
-	CHILLD	3452	3118	3452	3341	3452	3341	3452	3452	3341	3452	3341	3452	40,646 4.6
	PK	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.0
2		*		E UTILIT									P. 1	. 700
	HOTLD	576	520	576	557	576	557	576	576	557	576	557	576	6,780
	PK ·	0.8	8.0	8.0	0.8	0.8	0.8	0.8	8.0	. 0.8	0.8	8.0	0.8	0.8
1	EQ1010S		2 -S	TG CTV<1	90 TONS			HW) C	hiller CH-					
	ELEC	29182	29595	34278	34049	36892	36951	38363	38476	35653	35366	31788	32142	412,735
	PK	84.7	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1
1	EQ5100		coc	LING TOW	ER FANS			T	wr. Fan C	T-1A				
	ELEC	1545	1825	2220	2372	3350	5375	8377	8552	6499	2753	1914	1945	46,726
-	PK	8.5	8.7	8.9	9.9	11.8	12.5	12.5	12.5	12.5	10.6	8.8	8.7	12.5

f	Equip					Mont	hly Cons	umption						
m	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
1	EQ5100		COOL	ING TOWE	R FANS									
	WATER	. 99	104	123	123	134	135	140	141	130	128	112	112	1,481
	PK	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4
1	EQ5001		CHIL	LED WATE	R PUMP -	CONSTA	NT VOLUM	IE CH	W Pump	P-7				
	ELEC	29239	26410	29239	28296	29239	28296	29239	29239	28296	29239	28296	29239	344,268
	PK	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3
•	EQ5010		COND	ENSER WA	TED DIME	2-CV(H1CH	FEETC '		ID Pump	10A				
1	ELEC	20460	18480	20460	19800	20460	19800	20460	20460	19800	20460	19800	20460	240,900
	PK	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
_		\ <u></u>				-DI OCKO								
1	EQ5300	7//		ROL PANE 744	720	744	720	744	744	720	744	720	744	8,760
	EFEC	744 1.0	672 1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	PK	1.0	1.0	1.0	1.0	1.0	1.0							
1	EQ5020		HEAT	TING WATE	R CIRCU	LATION PL	JMP	HV	V pump P	-5				Γ
	ELEC	5661	5113	5661	5478	5661	5478	5661	5661	5478	5661	5478	5661	66,64
	PK	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.
2	EQ1010S		2-S	TG CTV<19	O TONS	W\HT REC	(95 DEG	Chi	ller CH-3					_
_	ELEC	0	94	1717	3285	4934	5901	5783	6321	4669	3725	253	94	36,77
	PK	0.0	22.5	23.5	27.4	30.4	32.0	33.4	33.2	31.6	29.4	23.3	22.5	33.
2	EQ5100		roo	LING TOWE	P FANS			Tv	vr. Fan CT	-1B				
~	ELEC	0	0	0	0	256	1934	2246	2253	1001	15	0	0	7,70
	PK	0.0	0.0	0.0	1.8	6.3	10.8	10.8	10.8	10.8	3.7	0.0	0.0	10.
_					TD FANC				-					•
2	EQ5100	0	.0	LING TOWN	10	17	20	20	22	16	12	1	0	12
-	WATER PK	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.
2	EQ5001	_		LLED WAT			ANT VOLU		•	•	0	0	0	
	ELEC	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	·= 0.
	PK	0.0	- 0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.
2	EQ5010		CON	DENSER W	ATER PUM	P-CV(HIG	H EFFIC.	, c	ND Pump	10B				1
	ELEC	0	293	3129	3111	4026	4538	4429	4721	3678	3257	586	311	32,08
	PK	0.0	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.
					0 7.11	ובטו טכאנ								
2	EQ5300		CON	ITROL PAN	EL & IN!	EKLOCKS								
2	EQ5300	0	16	ITROL PAN 171	EL & IN:	220	248	242	258	201	178	32	17	1,75

				E Q	Mqiu	ENT	ENER	G Y C	омѕи	MPTI	O N			•••••••
Ref	Equip				. 	Month	Ily Consi	umption .						
	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	0ct	Nov	Dec	Total
						550 BD1115	_	Fan AH	1					
1	EQ4223	4040				EED DRIVE		1000	1919	1845	1894	1831	1895	22,280
	ELEC	1810	1713	1902	1831	1898 6.5	6.5	1900 6.5	6.5	6.5	6.5	6.5	6.5	6.5
	PK	6.5	6.5	6.5	6.5	0.3				6.2		0.5		0.5
1	EQ4223		FC F	AN WIVAR	TARLE SP	EED DRIVE	=	Far	AHSI					<u> </u>
	ELEC	0	0	15	0	8	0	0	0	7	0	0	0	31
	PK	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.2
								l Fan	EE_1				r	
1	EQ4003		FC C	ENTR I FUG	AL - CON	STANT VOL	LUME	· I all	Ľ! -1					
	ELEC	33 5	335	372	360	372	382	390	395	379	372	360	372	4,423
	PK	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
								Fan Al	12				·	
2	EQ4223					EED DRIVE					7.05	7707	7/25	70 777
	ELEC	2927	2908	3467	3355	3443	3331	3437	3419	3292	3405	3323	3425	39,733 10.2
	PK	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
2	EQ4223		EC E	AN LIVVAR	TARLE SE	EED DRIV	F	Fan Al	iS1					
۷	ELEC	187	195	182	100	63	4	4	4	61	103	213	219	1,336
	PK	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6
	1 K							Fan Al-						
3	EQ4223		FC F	AN W\VAR	IABLE SF	EED DRIV	E	1 Gil 7 tr						
	ELEC	1262	1186	1387	1223	1325	1322	1169	1387	1223	1269	1173	1281	15,207
	PK	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
								Fan Al						
3	EQ4223					PEED DRIV						-00	00	450
	ELEC	81	94	98	52	37	5	6	6	35	53	90	92	0.4
	PK	0.4	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4
	E04223		EC E	EAN UNVAR	TARIF S	PEED DRIV	r E	Fan A	H5					
4	ELEC	566	1148	1554	1730	2681	3468	3301	3642	2708	2152	1189	1179	25,319
-	PK	5.0	10.1	10.1	14.1	17.2	17.2	17.2	17.2	17.2	14.1	10.1	10.1	17.2
		1						F== A1	104					
4	EQ4223		FC I	FAN W\VAR	RIABLE SI	PEED DRIV	/E	Fan A	151					
	ELEC	40	81	158	74	74	14	14	15	75	87	84	83	802
	PK	0.4	0.7	1.2	1.2	1.2	-0.0	0.0	0.0	1.2	1.2	0.7	0.7	1.2
								Fan Al				,		
5	EQ4223					PEED DRIV								70.570
	ELEC	2646	2813	3334	3148	3471	3523	3451	3671	3287	3310	2873	3013	38,539
	PK	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9
	EQ4223		EC.	FAN UNNA	PIARIF C	PEED DRI\	/F	Fan A	HS1					
2	ELEC	0	87	74N W (VAI	48	65	0	0	0	63	49	47	0	455
_	CLCL													0.8
	PK	0.0	0.8	0.8	0.8	0.8	0.1	0.2	0.0	0.8	0.8	0.8	0.8	0,0

				E Q	UIPM	ENT	ENER	G Y C	ONSU	MPTI	O N		••••	
Ref	Equip					Mont	hly Cons	umption						
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
_								an EF-2						
5	EQ4003			ENTRIFUG							242			1
	ELEC	753	739	826	830	878	858	878	888	848	869	840	823	10,03
	PK	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.1
6	EQ4223		FC F	AN W\VAR	TARLE SP	FED DRIV		an AH7						
Ŭ	ELEC	2087	1859	2058	2110	2220	2287	2360	2397	2147	2183	1992	2058	25,759
	PK	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.
		1											l	
6	EQ4223		FC F	AN W\VAR	IABLE SP	EED DRIV	E	an AHS1						
	ELEC	146	130	130	77	53	14	14	14	51	80	140	144	993
	PK	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.
							F	an AH-8						
7	EQ4003			ENTRIFUG			LUME	•						
	ELEC	2455	2218	2455	2376	2455	2376	2455	2455	2376	2455	2376	2455	28,90
	PK	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.
	F0/007							an AH-9						
٥	EQ4003 ELEC	4166		ENTRIFUG				/1//	/1//	(072	1111	4072	/1//	10.05
	PK	5.6	3763 5.6	4166 5.6	4032 5.6	4166 5.6	4032 5.6	4166 5.6	4166 5.6	4032 5.6	4166 5.6	4032 5.6	5.6	49,05
	T K	7.5					7.0							٦.
9	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME	Fan AH-1	0					
	ELEC	1339	1210	1339	1296	1339	1296	1339	1339	1296	1339	1296	1339	15,76
	PK	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.
		*						Fan AH-1	I1A					
10	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME	(4.17.1.1						
	ELEC	2753	2486	2753	2664	2753	2664	2753	2753	2664	2753	2664	2753	32,41
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.
								Fan AH-	11B					
11	EQ4003			ENTRIFUG										<u> </u>
-	ELEC	3497	3158	3497	3384	3497	3384	3497	3497	3384	3497	3384	3497	41,17
	PK	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.
12	EQ4003		EC C	ENTRIFUG	'AI - CON	ISTANT NO	N PME	Fan Al-	I- 1 2					
12	ELEC	2455	2218	2455	2376	2455	2376	2455	2455	2376	2455	2376	2455	28,90
	-PK	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.
	,	1												٥.
13	EQ4003		FC 0	CENTRIFUG	AL - CON	STANT VO	LUME	Fan Al	1-14					
	ELEC	4166	3763	4166	4032	4166	4032	4166	4166	4032	4166	4032	4166	49,05
	PK	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.
														
13	EQ4223		FC F	AN W\VAR	IABLE SP	EED DRIV	Æ	ran	AHS1					
	ELEC	116	104	116	112	116	112	116	116	112	116	112	116	1,36
-	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.

PK					E Q	UIPM	ENT	ENER	G Y C	ONSU	MPTI	O N		••••	
Num Code	Ref	Equip					Mont	hly Cons	umption						
14 E04223 F.			Jan	Feb				•	•			Oct	Nov	Dec	Total
ELEC								Fai	n AHS4						
PK	14		4577						1577	1577	1/8/	1577	1/:8/.	1533	18 054
GAS			f												
GAS					ELDED CT	SAN BOLL									
PK 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	1		0					n	n	n	n	0	0	0	0
1 E05020 HEATING WATER CIRCULATION PUMP ELEC 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0															
1 E05020		71	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
E	1	EQ5020		HEAT	ING WATE	R CIRCUL	ATION PL	IMP							
1 E03240 BOILER FORCED DRAFT FAN ELEC 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		ELEC	0	0	0	0	0	0	0	0		0	0		· -
ELEC		PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ELEC	1	EQ5240		BOIL	ER FORCE	D DRAFT	FAN								
1 EQ5307			0					0	0	0	0	0	0	0	0
ELEC		PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ELEC	1	F05307		CONT	ROLS										
PK	•	-	0			0	0	0	0	0	0	0	0	0	0
ELEC				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ELEC	1	FQ5061		CON	DENSATE F	RETURN PU	IMP (HIG	H EFFICII	ENCY)						
PK 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.			0	0	0	0	0	0	0	0	0	0	0	0	. 0
WATER			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WATER	1	EQ5406		MAKE	E-UP WATE	ER .									
PK	•		0				٥	0	0	0	0	0	0	0	0
GAS					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GAS	2	E02002		GAS	FIRED S	TEAM ROII	FR								
PK 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.			0					0	0	0	0	0	0	0	0
ELEC	-										0.0	0.0	0.0	0.0	0.0
ELEC	2	E05020		HFA	TING WAT	FR CIRCUI	ATION P	UMP							
PK 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	_		0						0	0	0	0	0	0	0
ELEC 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0											0.0	. 0.0	0.0	0.0	0.0
ELEC 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2	F05240		ROI	IER FORC	FD DRAFT	FAN								
PK 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.			n					0	0	0	0	. 0	0	0	0
ELEC 0 0 0 0 0 0 0 0 0 0 0															0.0
ELEC 0 0 0 0 0 0 0 0 0 0 0	_	F0E707		CON	TDOLS										
4666	2		n			n	n	n	n	n	n	0	٥	0	0
	-	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Trane Air Conditioning Economics
By: HUITT & ZOLLARS

				E Q	UIPM	ENT	ENER	G Y C	ONSU	MPTI	O N			
Ref	Equip					Mont	hly Cons	umption						
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
2	EQ5061		COND	ENSATE R	ETURN PUN	4P (HIGH	EFFICIE	NCY)						
	ELEC	0	0	0	0 :	0	.0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5406		MAKE	-UP WATE	R									
	WATER	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	EQ2263		ELEC	TRIC RES	ISTANCE I	HEAT WIT	H FAN							
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 1 EXISTING SECONDARY EQUIPMENT AND SYSTEMS

ECO-E, LSTC BUILDING

System Totals

Percent	Cool	ing Loa	d	Heati	ng Load		Cooling	Airflow		Heating	Airflow	
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
0 - 5	5.9	0	0	-54,281	88	1,668	6,618.8	0	0	0.0	0	0
5 - 10	11.9	0	0	-108,562	12	221	13,237.7	0	0	0.0	0	0
10 - 15	17.8	54	4,740	-162,843	0	0	19,856.5	0	0	0.0	0	0
15 - 20	23.7	0	30	-217,124	0	0	26,475.3	0	0	0.0	0	0
20 - 25	29.7	3	250	-271,405	0	0	33,094.2	0	0	0.0	0	0
25 - 30	35.6	1	69	-325,686	0	0	39,713.0	0	0	0.0	0	0
30 - 35	41.5	1	46	-379,967	0	0	46,331.8	0	0	0.0	0	0
35 - 40	47.5	1	123	-434,248	0	0	52,950.7	0	0	0.0	0	0
40 - 45	53.4	4	343	-488,529	0	0	59,569.5	0	0	0.0	0	0
45 - 50	59.4	2	147	-542,810	0	0	66,188.3	54	4,745	0.0	0	0
50 - 55	65.3	2	175	-597,091	0	0	72,807.2	3	267	0.0	0	0
55 - 60	71.2	3	305	-651,373	0	0	79,426.0	1	99	0.0	0	0
60 - 65	77.2	2	177	-705,654	0	0	86,044.8	1	93	0.0	0	0
65 - 70	83.1	3	259	-759,935	0	0	92,663.7	0	18	0.0	0	0
70 - 75	89.0	4	348	-814,216	0	0	99,282.5	1	53	0.0	0	. 0
75 - 80	95.0	4	356	-868,497	0	0	105,901.3	1	46	0.0	0	. 0
80 - 85	100.9	2	200	-922,778	0	0	112,520.2	10	889	0.0	0	0
85 - 90	106.8	4	354	-977,059	0	0	119,139.0	3	271	0.0	0	0
90 - 95	112.8	10	838	-1,031,340	0	0	125,757.8	11	998	0.0	0	0
95 - 100	118.7	0	0	-1,085,621	0	0	132,376.7	15	1,281	0.0	0	0
Hours Off	0.0	0	0	0	0	6,871	0.0	0	0	0.0	0	8,760

ef	Equip					Mont	thly Cons	sumption		 -			·	
m	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dес	Total
0	LIGHTS	Lightin	g Systems	;										
•	ELEC	31826	28759	32604	30674	32215	31452	31437	32604	30674	32215	30674	31437	376,570
	PK	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8
1	MISC LD													
	ELEC	26931	24324	26931	26062	26931	26062	26931	26931	26062	26931	26062	26931	317,08
	PK	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	MISC LD													
	OIL	. 0	0	0	0	0	0	0	0	0	0	0	0	_
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
4	MISC LD						_					_	_	
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	•
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	MISC LD			•			_	•		•	•	0	0	
	P HOTHZO	0	0	0	0	. 0	0	0	0	0.0	0.0	0 0.0	0 0.0	0.
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	υ.
6	MISC LD	•	•	•		•	^		•	•	•	0	0	
	P CHILL	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0 0.0	0.
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1		7/50		E UTILIT		7/50	77/1	7/53	7/50	3341	3452	3341	3452	40,64
	CHILLD PK	3452 4.6	3118 4.6	3452 4.6	3341 4.6	3452 4.6	3341 4.6	3452 4.6	3452 4.6	4.6	4.6	4.6	4.6	40,64
		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	7.0	7.0	4.0	4
2		576	BAS 520	E UTILIT 576	Y 557	576	557	576	576	557	576	557	576	6,78
	HOTLD PK	0.8		0.8	0.8	0.8	0.8	- 0.8	0.8	0.8	0.8	0.8	0.8	0,70
	PK ,	0.8	. 0.0	0.0	0.0	0.0	0.0		iller CH-1		0.0	0.0	0.0	v
1	EQ1010S	20462				W\HT REC		HW)			75744	71700	721/2	412.7
	ELEC	29182	29595	34278	34049	36892	36951	38363	38476	35653	35366	31788	32142 88.1	412,7
	PK	84.7	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1	00.1	00
1	EQ5100		COO	LING TOW	ER FANS	ıwr. Fa	n CT-1A							
	ELEC	1483	1752	2131	2277	3216	5160	8042	8210	6239	2643	1837	1867	44,8
	PK	8.1	8.4	8.5	9.5	11.3	12.0	12.0	12.0	12.0	10.2	8.5	8.4	12

				E Q	UIPM	IENT	ENER	GY C	ONSL	MPTI	O N	· • • • • • • •		•••••
Ref	Equip					Mont	hly Cons	umption						
	Code	Jan	Feb	Mar	Арг	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
1	EQ5100		COOL	ING TOWE	R FANS									
	WATER	99	104	123	123	134	135	140	141	130	128	112	112	1,481
	PK	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4
1	EQ5001		CHIL	LED WATE	R PUMP -	· CONSTA	NT VOLUM	1E CHW	/ Pump P	-7				
	ELEC	28942	26141	28942	28008	28942	28008	28942	28942	28008	28942	28008	28942	340,764
	PK	38.9	38.9	38.9	38.9	38.9	38.9	38.9	38.9	38.9	38.9	38.9	38.9	38.9
1	EQ5010		COND	ENSER WA	TER PUM	P-CV(HIG	EFFIC.	CND	Pump 10A	\				
•	ELEC	18451	16666	18451	17856	18451	17856	18451	18451	17856	18451	17856	18451	217,248
	PK	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8
1	EQ5300		CONT	ROL PANE	L & INTI	ERLOCKS								
	ELEC	744	672	744	720	744	720	744	744	720	744	720	744	8,760
	PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1	EQ5020		HEAT	ING WATE	R CIRCU	LATION PU	MP HV	V pump P-	5					
	ELEC	5354	4836	5354	5181	5354	5181	5354	5354	5181	5354	5181	5354	63,035
	PK	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
2	EQ1010S		2-\$1	rg CTV<19	O TONS	W\HT REC	(95 DEG	HW) Chi	ller CH-3					
	ELEC	0	94	1717	3285	4934	5901	5783	6321	4669	3725	253	94	36,776
	PK	0.0	22.5	23.5	27.4	30.4	32.0	33.4	33.2	31.6	29.4	23.3	22.5	33.4
2	EQ5100		COOL	ING TOWE	R FANS	Twr. Fan	CT-1B							
	ELEC	0	0	0	0	246	1863	2163	2169	963	15	0	0	7,419
	PK	0.0	0.0	0.0	1.7	6.1	10.4	10.4	10.4	10.4	3.6	0.0	0.0	10.4
2	EQ5100		COOI	LING TOW	R FANS									
	WATER	0	0	5	10	17	20	20	22	16	12	1	0	124
	PK	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1
2	EQ5001		CHI	LLED WATE	ER PUMP	- CONST	ANT VOLU	ME						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	. 0.0
2	EQ5010		CON	DENSER W	ATER PUM	P-CV(HIG	H EFFIC.) CND	Pump 10	В				
-	ELEC	0	283	3027	3009	3894	4390	4283	4567	3558	3151	566	301	31,028
	PK	0.0	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7
2	EQ5300		СОИ	TROL PAN	EL & INT	ERLOCKS								
-	ELEC	0	16	171	170	220	248	242	258	201	178	32	17	1,753
	PK	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
						-								

				E Q	UIPM	ENT	ENER	G Y C	ONSU	MPTI	o N			
ef	Equip					Monti	nlv Cons	umption						
	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
							_ Fan /	ΔH1						
1	EQ4223	4.74		AN W\VAR			=		4770	4707	47/0	1/00	17/0	20.547
	ELEC PK	1671	1581 6.0	1755 6.0	6.0	1752 6.0	1709 6.0	1754 6.0	1772 6.0	1703 6.0	1748 6.0	1690	6.0	20,567
	rk	1 0.0	0.0											5.0
1	EQ4223		FC F	AN W\VAR	IABLE SP	EED DRIV	Fan E	AHS1						
	ELEC	0	0	15	0	8	0	0	0	7	0	0	0	31
	PK	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.2
			***************************************					55 4						
1	EQ4003		FC C	ENTRIFUG.			LUME F	an EF-1						
	ELEC	307	307	341	330	341	350	358	362	348	341	330	341	4,055
	PK	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
2	EQ4223		EC E	AN W\VAR	TARIE CD	EED DRIV	F Fan	AH2						
۷	ELEC	2784	2766	3297	3191	3274	3168	3268	3251	3131	3238	3161	3257	37,785
	PK	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
		1						41104		·				
2	EQ4223		FC F	AN W\VAR	IABLE SP	EED DRIV	E Fan	AHS1						
	ELEC	187	195	182	100	63	4	4	4	61	103	213	219	1,336
	PK	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6
_		1					Fan A	нз						
3	EQ4223	11/5		AN W\VAR			-		1200	1120	1171	1007	1102	14,037
	ELEC PK	6.0	1095 6.0	1280 6.0	6.0	6.0	6.0	6.0	1280 6.0	1129 6.0	6.0	1083	6.0	6.0
	PK	0.0	0.0	0.0	0.0		0.0		0.0					0.0
3	EQ4223		FC F	AN W\VAR	IABLE SP	EED DRIV	E Fan	AHS1						
_	ELEC	81	94	98	52	37	5	6	6	35	53	90	92	650
	PK	0.4	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4
		}					_ Fan	AUE						
4	EQ4223		FC F	FAN W\VAR			E							
	ELEC	543	1102	1491	1660	2572	3327	3167	3494	2598	2065	1141	1131	24,294
	PK	4.8	9.7	9.7	13.5	16.5	16.5	16.5	16.5	16.5	13.5	9.7	9.7	16.5
,	E0/227		EC 5	FAN W\VAR	TADIE CO	CEN NOT	_c Fan	AHS1						
4	EQ4223 ELEC	40	81	158	74	74	14	14	15	75	87	84	83	802
,	PK	0.4	0.7	1.2	1.2	1.2	0.0	0.0	0.0	1.2	1.2	0.7	0.7	1.2
•	. 13	1,0,4	J.,											* * * -
5	EQ4223		FC F	FAN W\VAR	IABLE SF	EED DRIV	E Fa	n AH6					•	
	ELEC	2532	2691	3190	3012	3321	3371	3302	3512	3145	3167	2749	2883	36,876
	PK	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3
						,	F	AUC4		· · · · · · · · · · · · · · · · · · ·				
5	EQ4223			FAN W\VAR				AHS1					_	
	ELEC	0	87	96	48	65	0	0	0	63	49	47	0	455
	PK	0.0	0.8	0.8	8.0	0.8	0.1	0.2	0.0	0.8	8.0	8.0	8.0	0.8

						Manel	du cada	umption -						
	Equip Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
1611	Code	Jan	165	riai	Λþ.	Huy	barre	uuty	,,ug	٩٥٥	•••			• • •
5	EQ4003		FC C	ENTR I FUGA	AL - CON	STANT VOI	.UME F	an EF-2						<u></u>
•	ELEC	670	657	<i>7</i> 34	738	780	7 <i>6</i> 3	780	790	753	773	747	732_	8,916
	PK	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
		 	······································				Fan	ДН7						
6	EQ4223		FC F	AN W\VAR	ABLE SP	EED DRIV	Ē							
	ELEC	2031	1809	2002	2053	2160	2225	2297	2333	2088	2124	1938	2002	25,062
	PK	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
,	F0/337		FC 5	AN W∖VAR	TABLE CD	EED DOIN	_ Fan A	AHS1						
6	EQ4223 ELEC	146	130	4N W VAK	77	53	14	14	14	51	80	140	144	993
	PK	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5
		ļ							:					
7	EQ4003		FC C	ENTR I FUG	AL - CON	STANT VO	LUME I	Fan AH-8						
	ELEC	2306	2083	2306	2232	2306	2232	2306	2306	2232	2306	2232	2306	27,156
	PK	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
		+						an AH-9						_
8	EQ4003	7700		ENTRIFUG				7720	7700	7400	7720	7400	37 20	43,800
	ELEC	3720	3360	3720	3600	3720 5.0	3600 5.0	3720 5.0	3720 5.0	3600 5.0	3720 5.0	3600 5.0	5.0	5.0
	PK	5.0	5.0	5.0	5.0	5.0					J.0			3.0
0	EQ4003		FC C	ENTR I FUG.	At - CON	STANT VO	LUME F	an AH-10						
•	ELEC	1265	1142	1265	1224	1265	1224	1265	1265	1224	1265	1224	1265	14,892
	PK	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
		1						an AH-11.	Α					
10	EQ4003		FC C	ENTR I FUG	AL - CON	ISTANT VO			,					
	ELEC	2604	2352	2604	2520	2604	2520	2604	2604	2520	2604	2520	2604	30,660
	PK	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
							LUME	Fan AH-1	18					
11	EQ4003	777/		ENTRIFUG 3274		3274	3168	3274	3274	3168	3274	3168	3274	38,544
	ELEC PK	3274	2957	4.4	3168	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
	PK	1 4.4		7.7	7.7			7.7						
12	EQ4003		FC (CENTR1FUG	AL - CO	ISTANT VO	LUME	Fan AH-12	2					<u></u>
	ELEC	2306	2083	2306	2232	2306	2232	2306	2306	2232	2306	2232	2306	27,156
	PK	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
		1						San AU 44						
13	EQ4003		FC (CENTRIFUG	AL - CO	STANT VO	LUME '	an AH-14						
	ELEC	3720	3360	3720	3600	3720	3600	3720	3720	3600	3720	3600	3720	43,800
	PK	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
							Ess	AHS1						
13	EQ4223			FAN W\VAR					441	440	447	412	114	1 742
	ELEC	116	104	116	112	116	112	116	116	112	116	112	0.2	1,362
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	٠.٤

ef	Equip													
ım	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Tota
4	EQ4223		FC F	AN W\VAR	IABLE SP	EED DRIV	E Fan /	AHS4						
	ELEC	1506	1361	1506	1458	1506	1458	1506	1506	1458	1506	1458	1506	17,7
	PK	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21
1	EQ2002		GAS	FIRED ST	EAM BOIL	ER								
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C
1	£Q5020		HEAT	ING WATE	R CIRCUL	ATION PU	IMP							
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(
1	EQ5240		BOIL	ER FORCE	D DRAFT	FAN								
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(
1	EQ5307		CON1	rrols										
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(
1	EQ5061		CON	ENSATE R	ETURN PL	JMP (HIGH	H EFFICIE	ENCY)						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	O	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1	EQ5406		MAK	E-UP WATE	ER .									
	WATER	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ2002		GAS	FIRED ST	TEAM BOI	LER								
	GAS	0	0	0	0	0	0	0	0	C	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ5020		HEA	TING WATE	ER CIRCU	LATION P	UMP							
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	. 0.0	0.0	. 0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ5240		воі	LER FORCE	ED DRAFT	FAN							÷	
	ELEC	0	0	0	0	´ 0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ5307		CON	TROLS										
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 1
EXISTING SECONDARY EQUIPMENT AND SYSTEMS

ECO-F, LSTC BUILDING

System Totals

Percent	Cool	ing Loa	d	Heatir	ng Load		Cooling	Airflow		Heating	Airflow	
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
0 - 5	5.9	0	0	-54,281	88	1,668	6,618.8	0	0	0.0	0	0
5 - 10	11.9	0	0	-108,562	12	221	13,237.7	0	0	0.0	0	0
10 - 15	17.8	54	4,740	-162,843	0	0	19,856.5	0	0	0.0	0	0
15 - 20	23.7	0	30	-217,124	0	0	26,475.3	0	0	0.0	0	0
20 - 25	29.7	3	250	-271,405	. 0	0	33,094.2	0	0	0.0	0	0
25 - 30	35.6	1	69	-325,686	0	0	39,713.0	0	0	0.0	0	0
30 - 35	41.5	1	46	-379,967	0	0	46,331.8	0	0	0.0	0	0
35 - 40	47.5	1	123	-434,248	0	0	52,950.7	0	0	0.0	0	0
40 - 45	53.4	4	343	-488,529	0	0	59,569.5	0	0	0.0	0	0
45 - 50	59.4	2	147	-542,810	0	0	66,188.3	54	4,745	0.0	0	0
50 - 55	65.3	2	175	-597,091	0	0	72,807.2	3	267	0.0	0	0
55 - 60	71.2	3	305	-651,373	0	0	79,426.0	1	99	0.0	0	0
60 - 65	77.2	2	177	-705,654	0	0	86,044.8	1	93	0.0	0	0
65 - 70	83.1	3	259	-759 ,93 5	0	0	92,663.7	0	18	0.0	0	0
70 - 75	89.0	4	348	-814,216	0	0	99,282.5	1	53	0.0	0	0
75 - 80	95.0	4	356	-868,497	0	0	105,901.3	1	46	0.0	0	0
80 - 85	100.9	2	200	-922,778	0	0	112,520.2	10	889	0.0	0	0
85 - 90	106.8	4	354	-977,059	0	0	119,139.0	3	271	0.0	0	0
90 - 95	112.8	10	838	-1,031,340	0	0	125,757.8	11	998	0.0	0	0
95 - 100	118.7	0	0	-1,085,621	0	0	132,376.7	15	1,281	0.0	0	0
Hours Off	0.0	0	0	0	0	6,871	0.0	0	0	0.0	0	8,760

f	Equip -					Mon	thly Cons	sumption						
m	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Tot
D	LIGHTS	Lighting	3 Systems											
•	ELEC	31826	28759	32604	30674	32215	31452	31437	32604	30674	32215	30674	31437	376,5
	PK	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94.8	94
1	MISC LD													
	ELEC	26931	24324	26931	26062	26931	26062	26931	26931	26062	26931	26062	26931	317,0
	PK	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72.4	72
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C
,	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	.0	0	0	,
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(
5	MISC LD	•		•	•		•		0	0	0	0	0	
	P HOTH20	0.0	0 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	·
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(
1				E UTILIT									2470	
	CHILLD	3452	3118	3452	3341	3452	3341	3452	3452	3341	3452	3341	3452	40,6
	PK	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4
2				E UTILIT				,				rr 7	F7/	
	HOTLD	576	520	576	557	576	557	576	576	557	576 0.8	557 0.8	576 0.8	6,
	PK .	0.8	0.8	0.8	8.0	0.8	0.8	0.8	8.0	8.0	0.6	0.6		•
1		40000			ECIP. CH		New Chille		47//	75/0	0557	11/43	11517	107,
	ELEC	12288	10170	9846	8097	7651	6732	6922 50.0	6766	7549 50.0	8552 50.0	11462 50.0	11513 50.0	5
	PK	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0		0.0	٠.٠٠		,
1	EQ5100		coo	LING TOW	ER FANS	Twr. Fa	in CT-1A							
	ELEC	3509	2862	2732	2417	2771	3435	4804	4797	4312	2886	3131	3210	40,
	PK	11.5	11.6	11.5	11.6	12.0	12.0	12.0	12.0	12.0	11.5	11.5	11.6	1

Red Equip Num Code					E Q	UIPM	ENT	ENEF	RGY C	ONSU	JMPTI	O N			
Rum Code Jan Feb Mar Apr May June July Aug Sep Oct Mov Dec Total	Do.f	Sauin					Mont	hlv Cons	sumption						
MATER 61 51 50 61 39 35 36 35 39 43 57 57 574			Jan	Feb	Mar				•			Oct	Nov	Dec	Total
MATER 61 51 50 61 39 35 36 35 39 43 57 57 57 57 57 57 57 5	1	EQ5100		COOL	ING TOWE	R FANS									
1	-		61	51	50	41	39	35	36	35	39	43	57	57	544
1 E05001		PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ELEC 1857 1550 1634 1483 1431 1324 1370 1333 1386 1528 1699 1744 18,359 3.2	_			61171	. 50	D. DUMD	COUCTA	NT VOLUE	New	CHW Pu	ımp P-7A				
Second S	1		1057							1757	1796	1528	1600	1744	18 359
1															L
RESO11		PK	1 3.2	3.2	3.2	3.2	3.2								3.2
ELEC RY STATES AND STA	1	EQ5011		COND	ENSER WA	TER PUMP	-CV(MEDI	UM EFFI	C.)	ew CND P	ump IOA				
1			3208	2678	2823	2561	2472	2288	2366	2338	2394	2639	2935	3013	31,717
ELEC 575 480 506 459 443 410 424 419 429 473 526 540 5,684			5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
ELEC 575 480 506 459 443 410 424 419 429 473 526 540 5,684	1	F05300		CONT	ROL PANE	L & INTE	RLOCKS								
PK 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	•		575					410	424	419	429	473	526	540	5,684
New Chiller CH-3 Page Pa				1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
ELEC								New Chill	er CH-3						
PK 53.2 56.1 61.9 65.4 68.9 73.5 76.1 75.8 72.8 67.2 61.7 57.6 76.1 2 E05100 COOLING TOWER FANS TWIK. FAN CT-1B ELEC 916 1149 1537 1786 2326 3134 3319 3365 2710 1926 1179 1212 24,557 2 E05100 COOLING TOWER FANS 10.4 10.4 10.4 10.4 10.4 9.4 7.6 6.9 2 E05100 COOLING TOWER FANS 113 120 124 127 108 98 63 64 1,105 PK 0.3 0.4 0.4 0.5 0.5 0.5 0.5 0.5 0.4 0.4 0.4 0.5 2 E05001 CHILLED WATER PUMP - CONSTANT VOLUME New CHW Pump P-7B ELEC 1618 1823 2337 2581 2814 2898 2992 3039 2721 2627 1851 1935 29,237 PK 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 2 E05011 CONDENSER WATER PUMP-CV(MEDIUM EFFIC.) New CND Pump 10B ELEC 2111 2379 3050 3367 3672 3782 3904 3965 3550 3428 2416 2525 PK 12.2 12.2 12.2 12.2 12.2 12.2 12.2 12.2 12.2 12.2 12.2 2 E05300 CONTROL PANEL & INTERLOCKS ELEC 173 195 250 276 301 310 320 325 291 281 198 207 3,127 PK 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 E04223 FC FAN M\VARIABLE SPEED DRIVE FAN AH1 ELEC 1671 1581 1755 1691 1752 1700 1754 1772 1703 1748 1690 1749 2 E0557	2			YORK	CENT. R	R-123 CH									r
2 EQ5100 ELEC PK 916 1149 1537 1786 2326 3134 3319 3365 2710 1926 1179 1212 24,557 PK 6.4 6.9 7.3 8.8 10.4 10.4 10.4 10.4 10.4 9.4 7.6 6.9 2 EQ5100 WATER PK 0.3 0.4 0.4 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.4 0.4 0.4 0.4 0.5 ELEC PK 1618 1823 2337 2581 2814 2898 2992 3039 2721 2627 1851 1935 PK 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4		ELEC	8289	9991	13385	15089	17630	19163		-					L
ELEC 916 1149 1537 1786 2326 3134 3319 3365 2710 1926 1179 1212 24,557 PK 6.4 6.9 7.3 8.8 10.4 10.4 10.4 10.4 10.4 10.4 9.4 7.6 6.9 10.4 10.4 10.4 10.4 10.4 10.4 10.4 10.4		PK	53.2	56.1	61.9	65.4	68.9	73.5	76.1	75.8	72.8	67.2	61.7	57.6	76.1
PK	2	EQ5100		COOL	ING TOWE	R FANS	Twr. Fan	CT-1B							
2 EQ5100		ELEC	916	1149	1537	1786	2326	3134	3319	3365	2710	1926	1179	1212	24,557
WATER		PK	6.4	6.9	7.3	8.8	10.4	10.4	10.4	10.4	10.4	9.4	7.6	6.9	10.4
WATER PK 0.3 0.4 0.4 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.4 0.4 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.4 0.4 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	2	EQ5100		COOL	ING TOW	ER FANS									
2 EQ5001 CHILLED WATER PUMP - CONSTANT VOLUME PK 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4			49	61	83	94	113	120	124	127	108	98	63	64	1,105
2 EQ5001 ELEC 1618 1823 2337 2581 2814 2898 2992 3039 2721 2627 1851 1935 29,237 PK 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4		PK	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.5
ELEC 1618 1823 2337 2581 2814 2898 2992 3039 2721 2627 1851 1935 29,237 PK 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4	2	E05001		CUII	IED UATE	ED DIMD	- CONST	ANT VOLU	ME Nev	v CHW P	ump P-7B				
PK 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4	2		1618							3039	2721	2627	1851	1935	29,237
ELEC 2111 2379 3050 3367 3672 3782 3904 3965 3550 3428 2416 2525 38,149 PK 12.2 12.2 12.2 12.2 12.2 12.2 12.2 12.															
ELEC 2111 2379 3050 3367 3672 3782 3904 3965 3550 3428 2416 2525 38,149 PK 12.2 12.2 12.2 12.2 12.2 12.2 12.2 12.			1						. N	lew CND	Pump 10B				
PK 12.2 12.2 12.2 12.2 12.2 12.2 12.2 12.	2		2444				-						2/.16	2525	38 149
2 EQ5300															لسسنسيا
ELEC 173 195 250 276 301 310 320 325 291 281 198 207 3,127 PK 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0		PK	12.2	12.2	12.2	12.6	12.6.	12.2	12.2	12.2	12.2			12.2	1
PK 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	2	EQ5300					ERLOCKS								- 48-
1 EQ4223 FC FAN W\VARIABLE SPEED DRIVE Fan AH1 ELEC 1671 1581 1755 1691 1752 1700 1754 1772 1703 1748 1690 1749 20,567															
ELEC 1671 1581 1755 1691 1752 1700 1754 1772 1703 1748 1690 1749 20,567		PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
ELEC 1671 1581 1755 1691 1752 1700 1754 1772 1703 1748 1690 1749 20,567	1	F04223		FC	FAN W\VA	RIABLE S	PEED DRI	VE Fan	AH1						
	•		1671						1754	1772	1703	1748	1690	1749	20,567
							 					6.0	6.0		

	Equip					MOITCI	•	umption						
JITH .	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	O ct	Nov	Dec	Total
1	EQ4223		FC F	AN W\VARI	IABLE SP	EED DRIV	E Fan /	AHS1						
•	ELEC	0	0	15	0	8	0	C	0	7	0	0	0 _	3
	PK	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.
1	EQ4003		FC C	ENTR I FUG	AL - CON	STANT VO	LUME Far	EF-1						
	ELEC	307	307	341	330	341	350	358	362	348	341	330	341	4,05
	PK	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	. 1.
,	EQ4223		FC F	AN W∖VAR	IABLE SP	EED DRIV	Fan A	.H2						
•	ELEC	2784	2766	3297	3191	3274	3168	3268	3251	3131	3238	3161	3257	37,78
	PK	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.
,	EQ4223	7	FC F	AN W\VAR	IARIF SP	FED DRIV	F Fan A	HS1						<u> </u>
-	ELEC	187	195	182	100	63	4	4	4	61	103	213	219	1,33
	PK	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.
7	EQ4223		EC- E	AN W\VAR	IARIE CD	EED DOIN	F Fan A	λН3						
•	ELEC	1165	1095	1280	1129	1223	1221	1079	1280	1129	1171	1083	1182	14,0
	PK	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.
		 					Fan 4						<u>.</u>	
3	EQ4223			AN W\VAR			Έ						-00	
	ELEC	81	94	98	52	37	5	6	6	35	53	90	92	65
	PK	0.4	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.
4	EQ4223		FC F	AN W\VAR	IABLE SP	EED DRIV	Æ Fan	AH5						
	ELEC	543	1102	1491	1660	2572	3327	3167	3494	2598	2065	1141	1131	24,29
	PK	4.8	9.7	9.7	13.5	16.5	16.5	16.5	16.5	16.5	13.5	9.7	9.7	16
4	EQ4223		FC F	AN W\VAR	IABLE SF	PEED DRIV	/E Fan	AHS1						}
	ELEC	40	81	158	74	74	14	14	15	75	87	84	83	8
	PK	0.4	0.7	1.2	1.2	1.2	0.0	0.0	0.0	1.2	1.2	0.7	0.7	1
5	EQ4223		FC F	AN W\VAR	IABLE SF	PEED DRIV	/E Fan	AH6						
	ELEC	2532	2691	3190	3012	3321	3371	3302	3512	3145	3167	2749	2883	36,8
	PK	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13
5	EQ4223		FC I	AN W\VAR	RIABLE SE	PEED DRIV	/E Fan	AHS1				•	•	
	ELEC	0	87	96	48	65	0	0	0	63	49	47	0 -	4
	PK	0.0	8.0	0.8	0.8	8.0	0.1	0.2	0.0	0.8	0.8	0.8	0.8	0
		4											4	
5	FOADOZ		FC (ENTRIFIE	GAL - COL	NSTANT V	OLUME	Fan EF-2						
5	EQ4003 ELEC	670	FC (CENTRIFUC	GAL - COI 738	NSTANT VO 780	OLUME 763	780 780	790	753	773	747	732	8,9

				E Q	UIPM	ENT	ENER	G Y C	ONSU	MPTI	O N			
Ref	Equip -					Montl	hly Cons	umption						
	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
					7.4.D. E. C.D.		Fan A	A H7						
6	EQ4223	2031	1809	2002	IABLE SPE 2053	2160	2225	2297	2333	2088	2124	1938	2002	25,062
	ELEC PK	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
	PK	1 /	7											
6	EQ4223		FC F	AN W\VAR	IABLE SPE	EED DRIV	Fan A E	(H51						[]
	ELEC	146	130	130	77	53	14	14	14	51	80	140	144	993
	PK	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5
_		-	50.0	ENTO LEUC	AL - CON	CTANT VO	we Fa	an AH-8						
1	EQ4003	, 2306	2083	2306	2232	2306	2232	2306	2306	2232	2306	2232	2306	27,156
	ELEC PK	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
	r K	1				,		an AH-9						
8	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME	an A: 1-5						 1
	ELEC	3720	3360	3720	3600	3720	3600	3720	3720	3600	3720	3600	3720	43,800
	PK	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
_			F'C 6		AL - CON	CTANT VC	IIIME F	Fan AH-10)					
9	EQ4003	1265	1142	1265	1224	1265	1224	1265	1265	1224	1265	1224	1265	14,892
	ELEC PK	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
	FK	1							^					
10	EQ4003		FC (ENTRIFUC	AL - CON	STANT VO	OLUME "	an AH-11	A					r
	ELEC	2604	2352	2604	2520	2604	2520	2604	2604	2520	2604	2520	2604	30,660
	PK	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
		7				CTANT V	, I WE F	an AH-11	В					
11	EQ4003	727/	2957	3274	AL - CON 3168	3274	3168	3274	3 274	3168	3274	3168	3274	38,544
	ELEC PK	3274	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4,4	4.4	4.4
	PK.	1 4.4									· · · · · · · · · · · · · · · · · · ·			
12	EQ4003		FC (CENTRIFU	GAL - CON	ISTANT VO	DLUME F	an AH-12	<u>'</u>					
	ELEC	2306	2083	2306	2232	2306	2232	2306	2306	2232	2306	2232	2306	27,156
	PK	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
							Fi	an AH-14						
13	EQ4003	7720			3600 - 3600	3720	3600	3720	3720	3600	3720	3600	3720	43,800
	ELEC	3720 5.0	3360 5.0	3720 5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	PK	1 3.0	J.0	J.0			<u> </u>							
13	EQ4223		FC	FAN W\VA	RIABLE SE	PEED DRI	VE	AHS1						
	ELEC	116	104	116	112	116	112	116	. 116	112	116	112	116	1,362
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		<u> </u>					Fan	AHS4						
14	EQ4223				RIABLE SI			4===		4.55	450/	4/50	150/	17 774
	ELEC	1506	1361	1506	1458	1506	1458	1506	1506	1458 21.5	1506 21.5	1458 21.5	1506 21.5	17,736
	PK	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	۷۱.۵	۷۱.۵	21.5	21.3	21.3

Trane Air Conditioning Economics
By: HUITT & ZOLLARS

Ref	Equip					Mont	hly Cons	umption ·						
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
1	OILBLR		OIL	FIRED HO	T WATER 8	BOILER	New HW	Boiler B-1						
•	OIL	873	742	766	707	729	704	731	727	706	729	795	848	9,058
	PK	2.1	2.1	1.6	1.2	1.1	1.1	1.1	1.1	1.1	1.1	2.1	2.1	2.1
		 	-				Ne	w HW pur	np P-5					
1	EQ5020		HEAT	ING WATE	R CIRCUL	ATION P	JMP							<u>`</u>
	ELEC	379	343	379	367	379	367	379	379	367	379	367	379	4,468
	PK	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1	EQ5307		CONT	ROLS										
•	ELEC	372	336	372	360	372	360	372	372	360	372	360	372	4,380
	PK	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2	EQ2263		ELEC	TRIC RES	ISTANCE	HEAT WI	TH FAN							
_	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	. 0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

01 Card - Job Information

Project: EEAP ENERGY STUDY - HELSTF

Location: WHITE SANDS - ALAMOGORDO, NEW MEXICO

Client: FORT WORTH CORPS OF ENGINEERS Program User: HUITT-ZOLLARS, INC.

Comments: TEST CELL # 1 AND TEST CELL # 2

EXISTING TEST CELLS 1 & 2

Card 08-	Card 08 Climatic Information												
	Summer	Winter	Summer	Summer	Winter		Summer	Winter					
Weather	Clearness	Clearness	Design	Design	Design	Building	Ground	Ground					
Code	Number	Number	Dry Bulb	Wet Bulb	Dry Bulb	Orientation	Reflect	Reflect					
HOLLOMAN	•												

----- Load Section Alternative #1 -----

Card 19- Load Alternative -

Number Description

EXISTING CONDITIONS

Card 20														
	Zone						Acoustic	Floor to	Duplicate	Duplicate	Perimeter			
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth			
Number	Number	Descrip	Length	Width	Туре	Height	Resistance	Height	Multiplier	Zone				
5	1	DEVICE RM. A-104	69	33	8	0	1	32						
10	2	DEVICE RM B-105	32	41	8	0	1	29						
15	3	RM 102, 103	59	36	8	0	1	32						
20	4	RM 109	26	44	8	0	1	16						
25	5	PT ELEC RM 201	27	37	8	0	1	17						
30	6	RM. 101,102,105	46	46	8	0	1	15						
35	7	RM 102	24	30	8	0	1	15						
40	8	RM 204,301,401	57	57	8	0	1	15						
45	9	HPOC, 501	25	24	8	0	1	15						
50	10	ETA CNTRL RM 103	25.5	13	8	0	1	15	=					

Card 21				Therm	ostat Param	eters				
	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location	No. Hrs	On
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor
5	70	50	70		70	70				NO

Card 2	Card 21 Thermostat Parameters													
	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet				
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location	No. Hrs	On				
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor				
10	70	50	70		70	70				NO				
15	70	50	70		70	70				NO				
20	70	50	70		70	70				NO				
25	70	50	70		70	70 *				NO				
30	70	50	70		70	70				NO				
35	70	50	70		70	70				NO				
40	70	50	70		70	70				NO				
45	70	50	70		70	70				NO				
50	70	50	70		70	70				NO				

Card 22				Roof Para	meters				
		Roof							
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof	Roof	Roof
Number	Number	Floor?	Length	Width	U-Value	Type	Direction	Tilt	Alpha
5	1	YES			0.1	23			
10	1	YES			0.1	23			
15	1		69	36	0.1	23			
25	1	YES			0.1	23			
30	1	YES			0.1	23			
45	1	YES			0.32	23			
50	1	YES			0.32	23			

Card 24	Card 24 Wall Parameters												
					Wall				Ground				
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance				
Number	Number	Length	Height	U-Value	Type	Direction	Tilt	Alpha	Multiplier				
5	1	33	32	0.32	58	315							
5	2	69	32	0.32	58	45							
10	1	32	29	0.32	58	315							
10	2	29.5	29.5	0.32	58	225							
15	1	38	32	0.32	58	315							
15	2	38	32	0.32	58	135							
20	1	27	16	0.32	58	135							
25	1	27	17	0.32	58	135							
30	1	78.	15	0.32	58	315							
30	2	43	15	0.32	58	45							
30	3	42	15	0.32	58	135							
30	4	30	15	0.32	58	225							
40	1	75	15	0.32	58	315							
40	2	75	15	0.32	58	45							
40	3	75	15	0.32	58	135							
40	4 ,	75	15	0.32	58	225							

Card 24	Card 24 Wall Parameters														
					Wall				Ground						
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance						
Number	Number	Length	Height	U-Value	Type	Direction	Tilt	Alpha	Multiplier						
45	1	25	15	0.32	58	315									
45	2	24	15	0.32	58	45									
45	3	25	15	0.32	58	135									
45	4	24	15	0.32	58	225	•								
50	1	13	15	0.32	58	45									
50	2	25.5	15	0.32	58	135									
50	3	8	15	0.32	58	225									

Card 26				S	chedules -					
Room					Reheat	Cooling	Heating	Auxiliary	Room	Daylighting
Number	People	Lights	Ventilation	Infiltration	Minimum	Fans	Fan	Fan	Exhaust	Controls
5	OFFICEP1	CLGONLY								
10	OFFICEP1	CLGONLY								
15	OFFICEP1	CLGONLY								
20	OFFICEP1	CLGONLY								
25	OFFICEP1	CLGONLY								
30	OFFICEP1	CLGONLY	•							
35	OFFICEP1	CLGONLY		-						
40	OFFICEP1	CLGONLY								
45	OFFICEP1	CLGONLY								
50	OFFICEP1	CLGONLY								

Card 27	Card 27 People and Lights											
							Lighting		Percent	Daylig	hting	
Room	People	People	People	People	Lighting	Lighting	Fixture	Ballast	Lights to	Reference	Reference	
Number	Value	Units	Sensible	Latent	Value	Units	Туре	Factor	Ret. Air	Point 1	Point 2	
5	2	PEOPLE	250	200	17058	WATTS	INCAND					
10	2	PEOPLE	250	200	8098	WATTS	INCAND					
15	4	PEOPLE	250	200	5768	WATTS	INCAND					
20	2	PEOPLE	250	200	3693	WATTS	INCAND					
25	5	PEOPLE	250	200	2200	WATTS	INCAND					
30	3	PEOPLE	250	200	7892	WATTS	INCAND					
35	5	PEOPLE	250	200	690	WATTS	INCAND					
40	10	PEOPLE	250	200	4912	WATTS	ASHRAE1					
45	4	PEOPLE	250	200	2608	WATTS	INCAND					
50	1	PEOPLE	250	200	864	WATTS	ASHRAE1					

Card 2	Card 28 Miscellaneo										
	Misc		Energy	Energy		Energy	Percent	Percent	Percent		
Room	Equipment	Equipment	Consump	Consump	Schedule	Meter	of Load	Misc. Load	Misc. Sens	Radiant	Optional
Number	Number	Descrip	Value	Units	Code	Code	Sensible	to Room	to Ret. Air	Fraction	Air Path
5	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					

Card 28 Miscella						Equipment	ent				
Mis	sc		Energy	Energy		Energy	Percent	Percent	Percent		
Room Equ	uipment :	Equipment	Consump	Consump	Schedule	Meter	of Load	Misc. Load	Misc. Sens	Radiant	Optional
Number Num	mber	Descrip	Value	Units	Code '	Code	Sensible	to Room	to Ret. Air	Fraction	Air Path
10 1		TESTING EQ,COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
15 1		TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
20 1		TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
25 1		TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
30 1		TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
35 1		TESTING EQ,COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
40 1		TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
45 1		TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
50 1		TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					

		Venti	lation			Infil	tration			
Room	Coo	ling	Heat	ting	Coo	ling	Hea	ting	Reheat	Minimum-
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
5	280	CFM	280	CFM						
10	100	CFM	100	CFM						
15	4700	CFM	4700	CFM						
20	0	CFM	0	CFM						
25	0	CFM	0	CFM						
30	285	CFM	285	CFM						
35	790	CFM	790	CFM						
40	750	CFM	750	CFM						
45	3600	CFM	3600	CFM						
50	360	CFM	360	CFM						

Card 30)				Fan Airflo	ows				
		Ma	in			Auxi	liary			
Room	Cool	ling	Heat	ing	Coo	ling	Hea	ting	Room E	xhaust
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
5	5892	CFM	5892	CFM						
10	3344	CFM	3344	CFM						
15	10758	CFM	10758	CFM					600	CFM
20	15667	CFM	15667	CFM						
25	10386	CFM	10386	CFM					,	
30	2850	CFM	2850	CFM			*			
35	4080	CFM	4080	CFM						
40	12510	CFM	12510	CFM						
45	3600	CFM	3600	CFM						
50	1880	CFM	1880	CFM						

----- System Section Alternative #1 -----

Card 39- System Alternative

Number Description

10

VTCV

EXISTING AIRSIDE EQUIPMENT

Card 40----- System Type ----------OPTIONAL VENTILATION SYSTEM------Ventil Set System Deck Cooling Heating Cooling Heating Static Number Type Location SADBVh SADBVh Schedule Schedule Pressure 1 TRH 2 TRH TRH 3 4 VTCV VTCV 5 VTCV 6 VTCV 8 VTCV VTCV

Card 41					Zone A	ssignmen	t					
System Set	Ref	#1	Ref	#2	Ref	#3	Ref	#4	Ref	#5	Ref	#6
Number	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End
1	1	1										
2	2	2										
3	3	3										
4	4	4										
5	5	5										
6	6	6										
7	7	7										
8	8	8										
9	9	9										
10	10	10										

Card 42 Fan SP and Duct Parameters											
System	Cool	Heat	Return	Mn Exh	Aux	Rm Exh	Cool	Return	Supply	Supply	Return
Set	Fan	Fan	Fan	Fan	Fan	Fan	Fan Mtr	Fan Mtr	Duct	Duct	Air
Number	SP	SP	SP	SP	SP	SP	Loc	Loc	Ht Gn	Loc	Path
1	1.5							*			
2	1.6										
3	1.9					. 5					
4	1.6										
5	1.6										
6	4.6										

_	Cool H	eat	Return	Mn Ex	h Aux	Rm Exh	Cool	Return	Supply	Supply	Retur	n	
et		an	Fan	Fan		Fan		Fan Mtr		Duct	Air		
lumber		P	SP	SP	SP	SP	Loc	Loc	Ht Gn	Loc	Path		
'	2.0												
3	2.0												
)	1.5							,					
10	2.0					•		•					ŧ
Card 43	-				Airflo	w Design	Temperatu	res					
System	Minimum	ı Ma	ximum	Minimum	Maxim	um Mini	mum Maxim	um Minim	um Maxi	num Min	imum	Design	
Set	Cooling	; Co	oling	Heating	Heati	ng Cool	ing Cooli	ng Prehe	at Preh	eat Roo	m	Ht Rec	
	SADB	SA		SADB	SADB	Lv D	B Lv DB	Lv DB	Lv D	B RH		Diff	
1	48.4	48											
2	48.4												
3	47.4	47	. 4										
													•
ard 45	;					Eq	uipment Sc	hedules -					
System							Auxiliar	_	Main				Auxiliar
Set	Cooling	-		Eva	-	Evap	Cooling		_		heat		Heating
	Coil	Ε	conomiz	er Coi	Ţ	Coil	Coil	Coil	Coil	Co	il	Humidity	Coil
1								OFF					
2								OFF OFF					
3 4								OFF					
4 5								OFF					
							chedules -						
		g %1	-411L	Obcie	um Op			Pattern				Exhaust	
System	Discri			Start	St								
System Set	Discrin	l P	urge	Start Sched		-	Schedule		Off Tim	e Sched	lule	Schedule	
System Set	Discrin	l P	urge			-			Off Tim	e Sched	lule	Schedule	
System Set Number	Discrin Contro Schedu	l P	urge			-			Off Tim	e Sched	lule	Schedule	
System Set Number 1	Discrin Control Schedul AVAIL	l P	urge			-			Off Tim	e Sched	lule	Schedule	
System Set Number 1 2	Discrin Control Schedul AVAIL AVAIL	l P	urge			-			Off Tim	e Sched	lule	Schedule	
System Set Wumber 1	Discrin Control Schedul AVAIL AVAIL	l P	urge			-			Off Tim	e Sched	lule	Schedule	
System Set Wumber L 2	Discrin Control Schedu AVAIL AVAIL AVAIL	l P	urge schedule	e Sched	dule So	chedule		Length			lule	Schedule	
System Set Number 1 2	Discrin Control Schedu AVAIL AVAIL AVAIL	l P	urge schedule	e Sched	dule So	chedule	Schedule	Length			dule ,	Schedule	
System Set Number 1 2 3	Discrin Contro Schedu AVAIL AVAIL AVAIL	l P	rurge chedule	e Sched	ule So	- hedule - Alterna	Schedule	Length			·		
System Set Number 1 2 3	Discrin Control Schedul AVAIL AVAIL AVAIL	l P	urge ichedule	e Sched	ule So	chedule Alterna	Schedule	Length			·		
System Set Number 1 2 3	Discrin Control Schedul AVAIL AVAIL AVAIL	l Fle S	rurge chedule	e Sched	ule So Section Equ	Alterna aipment D Demand	Schedule	Length			·		nd Limit -
System Set Number 1 2 3	Discrin Control Schedul AVAIL AVAIL AVAIL E B B B B B B B B B B B B B B B B B B	l Fle S	chedule chedule Equi	e Sched	Section Certion Certion Certion Certion	Alterna Lipment D Demand Limit	Schedule	Length	rhedules		·		

Page #7

Load All Coil Cooling Asgn Loads To Equipment -Group 1- -Group 2- -Group 3- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-Ref Cool Ref Sizing Begin End 1 10 Card 62----- Cooling Equipment Parameters -------Capacity-- ----Energy---- Order Seq Limit Of --Capacity-- ---Energy----Ref Code Num Type Number Num Name Units Value Units Value Units Value Units Value Units 1 1 EQ1001S 1 151 TONS 141 KW PAR TONS 141 KW 2 PAR 2 EQ1001S 1 151 Card 63----- Cooling Pumps and References ------Cool ---CHILLED WATER---- ----CONDENSER----- ---HT REC or AUX---- Switch-Ref Full Load Full Load Full Load Full Load Full Load Full Load over Cold Cooling Misc. Num Value Units Value Units Value Units Control Storage Tower Access. 3 13.2 ĸw 1 27.3 KW 2 28.7 KW 10.5 KW Card 65----- Heating Load Assignment Load All Coil Assignment Loads To -Group 1- -Group 2- -Group 3- -Group 4- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-Reference Heating Ref Begin End 1 3 6 10 1 Card 67------ Heating Equipment Parameters Energy Seq Switch Heat Equip Number HW Pmp Order over Hot Misc. Code Of Full Ld Cap'y Rate Units Value Units Value Units Number Control Strg Acc. Cogen Number Number Name Value Units 1 1060 MBH BLR51 2.7 KW 1683 MBH 1 2.7 KW 1060 MBH 1683 MBH 2 BLR51 Card 69----- Fan Equipment Parameters System Exhaust Auxiliary Room Set Cooling Heating Return Fan Supply Exhaust Ventilation Fan Fan Number Fan E04003 E04003 3 EQ4003 EQ4003

Card 60------ Cooling Load Assignment------

Card 69 Fan Equipment Parameters												
System												
Set	Cooling	Heating	Return	Exhaust	Auxiliary	Room	Optional					
Number	Fan	Fan	Fan	Fan	Supply	Exhaust	Ventilation					
5	EQ4003											
6	EQ4003											
7	EQ4003											
8	EQ4003					•						
9	EQ4003											
10	EQ4003											

Card 70	Card 70 Fan Equipment KW Overrides											
		MAIN S	YSTEM-		OTH	ER SYS	TEM	D	EMAND	LIMIT	PRIORI	TY
System	Cool	Heat	Ret	Exh	Aux	Room	Opt				Room	Opt
Set	Fan	Fan	Fan	Fan	Sup	Exh	Vent	Cool	Heat	Aux	Exh	Vent
Number	KW	KW	KW	KW	KW	KW	KW	Fan	Fan	Fan	Fan	Fan
1	4.9											
2	1.7											•
3	8.6											
4	4.4											
5	4.1				•							
6	4.9											
7	8.7											
8	10.3											
9	2.1											
10	4.1											

Card 71-			Base	Utility P	arameters				
Base	Base	Hourly	Hourly			Equip	Demand		
Utility	Utility	Demand	Demand	Schedule	Energy	Reference	Limiting	Entering	Leaving
Number	Descrip	Value	Units	Code	Туре	Number	Number	Temp	Temp
1	CHW LOADS	45.6	TONS	AVAIL	CHILL-LD	1			
2	HW LOADS	90.9	MBH	AVAIL	HOT-LD	1			
3	ALL OTHER LIGHTS	8.79	KW	OFICEL24	ELEC				
4	ESH-53	22.4	KM	ESH53	ELEC				

Card 74	4			Condenser	/ Cooling	g Tower 1	Parameters				
	Cooling			Energy	Energy			Number	Percent	Low Spd	Low Spd
Tower	Tower	Capacity	Capacity	Consump	Consump	Fluid	Tower	Of	Airflow	Energy	Energy
Ref	Code	Value	Units	Value	Units	Type	Type	Cells	Low Spd	Value	Units
1	EQ5100			5.3	KW	T-WATER	CTOWER	1			
2	E05100			5.3	KW	T-WATER	CTOWER	1			

Card	75				Misce	ellaneous A	ccessory					
	#1				#2				#3			
Misc	Equip	Energy	Energy	Sched	Equip	Energy	Energy	Sched	Equip	Energy	Energy	Sched
Ref	Code	Value	Units	Code	Code	Value	Units	Code	Code	Value	Units	Code
1	EQ5013	22.3	KM									
2	EQ5013	22.3	KM									
3	EQ5020	6.4	KM				a ·					
4	EQ5020	7.2	KW									

----- Load Section Alternative #2 -----

ECO-A, TEST CELLS 1 & 2

Card 19- Load Alternative -

Number Description
2 ECO A - LIGHT FIXTURE UPGRADE

Card 20				Genera	al Room	Paramete	rs				
	Zone						Acoustic	Floor to	Duplicate	Duplicate	Perimeter
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number	Number	Descrip	Length	Width	Type	Height	Resistance	Height	Multiplier	Zone	
5	1	DEVICE RM. A-104	69	33	8	0	1	32			
10	2	DEVICE RM B-105	32	41	8	0	1	29			
15	3	RM 102, 103	59	36	8	0	1	32			
20	4	RM 109	26	44	8	0	1	16			
25	5	PT ELEC RM 201	27	37	8	0	1	17			
30	6	RM. 101,102,105	46	46	8	0	1	15			
35	7	RM 102	24	30	8	0	1	15			
40	8	RM 204,301,401	57	57	8	0	1	15			
45	9	HPOC, 501	25	24	8	0	1	15			
50	10	ETA CNTRL RM 103	25.5	13	8	0	1	15			

Card 21				Therm	ostat Param	eters				
	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location	No. Hrs	On
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor
5	70	50	70		70	70				NO
10	70	50	70		70	70				МО
15	70	50	70		70	70				NO
20	70	50	70		70	70				NO
25	70	50	70		70	70				NO
30	70	50	70		70	70				ио
35	70	50	70		70	70				NO
40	70	50	70		70	70				МО
45	70 ~	50	70		70	70				МО
50	70	50	70		70	70				NO

Card 22				Roof Para	meters				
		Roof							
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof	Roof	Roof
Number	Number	Floor?	Length	Width	U-Value	Type	Direction	Tilt	Alpha
5	1	YES			0.1	23			
10	1	YES			0.1	23			
15	1		69	36	0.1	23			
25	1	YES			0.1	23	•		
30	1	YES			0.1	23			
45	1	YES			0.32	23			
50	1	YES			0.32	23			

Card 24				Wall P	arameters				
					Wall				Ground
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance
Number	Number	Length	Height	U-Value	Type	Direction	Tilt	Alpha	Multiplier
5	1	33	32	0.32	58	315			
5	2	69	32	0.32	58	45			
10	1	32	29	0.32	58	315			
10	2	29.5	29.5	0.32	58	225			
15	1	38	32 .	0.32	58	315			
15	2	38	32	0.32	58	135			
20	1	27	16	0.32	58	135			
25	1	27	17	0.32	58	135			
30	1	78	15	0.32	58	315			
30	2	43	15	0.32	58	45			
30	3	42	15	0.32	58	135			
30	4	30	15	0.32	58	225			
40	1	75	15	0.32	58	315			
40	2	75	15	0.32	58	45			
40	3	75	15	0.32	58	135			
40	4	75	15	0.32	58	225			
45	1	25	15	0.32	58	315			
45	2	24	15	0.32	58	45			
45	3	25	15	0.32	58	135			
45	4	24	15	0.32	58	225			
50	1	13	15	0.32	58	45			
50	2	25.5	15	0.32	58	135			
50	3	8	15	0.32	58	225			

								•		
Card 26				S	Schedules					
Room					Reheat	Cooling	Heating	Auxiliary	Room	Daylighting
Number	People	Lights	Ventilation	Infiltration	Minimum	Fans	Fan	Fan	Exhaust	Controls
5	OFFICEP1	CLGONLY								
10	OFFICEP1	CLGONLY								
15	OFFICEP1	CLGONLY								
20	OFFICEP1	CLGONLY								
25	OFFICEP1	CLGONLY								
30	OFFICEP1	CLGONLY								
35	OFFICEP1	CLGONLY								

Room						Rehe	at C	ooling	Heating	g Auxil	iary	Room	Daylig	hting	
Number	People	Lig	hts Ventil	lation	Infiltratio	n Mini	mum F	ans	Fan	Fan		Exhaust	Contro	ols	
40	OFFICEP	1 CLC	ONLY				*								
45	OFFICEP	1 CLC	ONLY												
50	OFFICEP	1 CLC	ONLY												
							•								
Card 27	'			-	Peopl	e and L	ights -								
							Lig	hting		Percent		Daylig	hting		
Room	People	Peopl	e People	People	≥ Lighting	Lighti	ng Fix	ture	Ballast	Lights t	o Ref	erence	Referer	ice	
Number	Value	Units	Sensible	Latent	. Value	Units	тур	e	Factor	Ret. Air	Poi	nt 1	Point 2	!	
5	2	PEOPI	E 250	200	15118	WATTS	INC	AND							
10	2	PEOPI	E 250	200	7454	WATTS	INC	AND							
15	4	PEOPI	E 250	200	5084	WATTS	INC	AND							
20	2	PEOPI	E 250	200	2148	WATTS	INC	AND							
25	5	PEOPI	E 250	200	1856	WATTS	INC	AND							
30	3	PEOPI	E 250	200	5202	WATTS	INC	AND							
35	5	PEOPI	E 250	200	642	WATTS	INC	AND							
40	10	PEOPI	E 250	200	3026	WATTS	ASH	RAE1							
45	4	PEOPI	E 250	200	2296	WATTS	INC	AND							
50	1	PEOPI	E 250	200	558	WATTS	ASH	RAE1							
Card 28							laneous	Equip	ment						
	Misc				nergy Ener			Energy		ent Per		Perc			
Room			quipment		onsump Cons	-	hedule						. Sens		_
	Number		escrip		alue Unit		de	Code	Sens	ible to	Room	to R	et. Air	Fraction	Air Path
5	1	T	ESTING EQ, COM	P. 2	.46 WATI	-SF OF	FICEM1	ELEC							

Card 26----- Schedules -----

	Misc		Energy	Energy		Energy	Percent	Percent	Percent		
Room	Equipment	Equipment	Consump	Consump	Schedule	Meter	of Load	Misc. Load	Misc. Sens	Radiant	Optional
Number	Number	Descrip	Value	Units	Code	Code	Sensible	to Room	to Ret. Air	Fraction	Air Path
5	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
10	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
15	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
20	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
25	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
30	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
35	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
40	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
45	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
50	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					

Card 29		·			Room Airfl	ows				
		Ventila	tion			Infilt	ration			
Room	Coolir	1g	Heatin	g	Cooli	ng	Heati	ng	Reheat Min	imum
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
5	280	CFM	280	CFM						
10	100	CFM	100	CFM						
15	4700	CFM	4700	CFM						
20	0	CFM	0	CFM						

Card 29					- Room Airf	lows				
		Ventila	ation			Infilt	ration			
Room	Coolir	ng	Heatin	ıg	Cool	ing	Heat:	ing	Reheat N	linimum
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
25	0	CFM	0	CFM						
30	285	CFM	285	CFM						
35	790	CFM	790	CFM						
40	750	CFM	750	CFM		•				
45	3600	CFM	3600	CFM						
50	360	CFM	360	CFM						

Card 3)				Fan Airflo	ows				
		Ma	in			Auxi	liary			
Room	Cool	ling	Heat	ing	Coo	ling	Hea	ing	Room E	xhaust
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
5	5892	CFM	5892	CFM						
10	3344	CFM	3344	CFM						
15	10758	CFM	10758	CFM					600	CFM
20	15667	CFM	15667	CFM						
25	10386	CFM	10386	CFM						
30	2850	CFM	2850	CFM						
35	4080	CFM	4080	CFM						
40	12510	CFM	12510	CFM						
45	3600	CFM	3600	CFM						
50	1880	CFM	1880	CFM						

----- System Section Alternative #2 ------

Card 39- System Alternative Number Description

2 EXISTING AIRSIDE EQUIPMENT

Card 40 System Type									
			OPTION	AL VENTIL	ATION SYST	EM			
System		Ventil ~					Fan		
Set	System	Deck	Cooling	Heating	Cooling	Heating.	Static		
Number	Type	Location	SADBVh	SADBVh	Schedule	Schedule	Pressure		
1	TRH								
2	TRH								
3	TRH								
4	VTCV								
5	VTCV								
6	VTCV								
7	VTCV								

Card 40	Card 40 System Type									
			OPTION	AL VENTIL	ATION SYST	EM				
System		Ventil					Fan			
Set	System	Deck	Cooling	Heating	Cooling	Heating	Static			
Number	Type	Location	SADBVh	SADBVh	Schedule	Schedule	Pressure			
8	VTCV									
9	VTCV									
10	VTCV					•				

Card 41					Zone A	ssignmen	t					
System												
Set	Ref	#1	Ref	#2	Ref	#3	Ref	#4	Ref	#5	Ref	#6
Number	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End
1	1	1										
2	2	2										
3	3	3										
4	4	4										
5	5	5										
6	6	6										
7	7	7										
8	8	8										
9	9	9										
10	10	10										

Card 42				Fan	SP ar	nd Duct F	arameters				
System	Cool	Heat	Return	Mn Exh	Aux	Rm Exh	Cool	Return	Supply	Supply	Return
Set	Fan	Fan	Fan	Fan	Fan	Fan	Fan Mtr	Fan Mtr	Duct	Duct	Air
Number	SP	SP	SP	SP	SP	SP	Loc	Loc	Ht Gn	Loc	Path
1	1.5										
2	1.6										
3	1.9					.5					
4	1.6										
5	1.6										
6	4.6										
7	2.0										
8	2.0										
9	1.5							•			
10	2.0										

Card 43										
System	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Design
Set	Cooling	Cooling	Heating	Heating	Cooling	Cooling	Preheat	Preheat	Room	Ht Rec
Number	SADB	SADB	SADB	SADB	Lv DB	Lv DB	Lv DB	Lv DB	RH	Diff
1	48.4	48.4								
2	40 4	10 1								

Card 43------ Airflow Design Temperatures ------System Minimum Maximum Minimum Maximum Minimum Maximum Minimum Maximum Minimum Maximum Minimum Design Set Cooling Cooling Heating Heating Cooling Cooling Preheat Preheat Room Ht Rec Number SADB SADB SADB Lv DB Lv DB Lv DB Lv DB RH 3 47.4 47.4 Card 45----- Equipment Schedules -----System Main Direct Indirect Auxiliary Main Main Set Cooling Evap Evap Cooling Heating Preheat Reheat Mech. Heating Number Coil Economizer Coil Coil Coil Coil Coil Coil Humidity Coil OFF OFF OFF OFF OFF Card 46----- EMS/BAS Schedules ------ ${\tt System} \quad {\tt Discrim} \quad {\tt Night} \qquad {\tt Optimum} \quad {\tt Optimum} \quad {\tt -------DUTY} \; {\tt CYCLING------} \quad {\tt System} \; {\tt HR} \quad {\tt Room} \; {\tt HR}$ Set Control Purge Start Stop On Period Pattern Maximum Exhaust Number Schedule Schedule Schedule Schedule Length Off Time Schedule Schedule AVAIL AVAIL 2 AVAIL ----- Equipment Section Alternative #2 -----Card 59----- Equipment Description / TOD Schedules -----Elec Consump Elec Demand Demand ---- Demand Limit ---Alternative Time of Day Time of Day Limit Temperature Number Schedule Schedule Max KW Alternative Description Schedule Drift EXISTING PRIMARY EQUIPMENT Card 60------Cooling Load Assignment------Load All Coil Cooling Asgn Loads To Equipment -Group 1- -Group 2- -Group 3- -Group 4- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-Ref Cool Ref Sizing Begin End 1 10

OOT F	Equip	Num			COOLING				HEAT RECOV	ERY		Seq		Demand	1
ef (Code	Of		pacity				Capacit	у	Energy	/	Order	Seq	Limit	
ım î	Name	Units	Value	e Units	s V	alue	Units	Value, Un	its \	/alue (Jnits	Num	Type	Number	r
	EQ1001S	1	151	TONS	1.	41	KW					1	PAR		
1	EQ1001S	1	151	TONS	1.	41	KW					2	PAR		
								eferences					-		
								d Full Load		Cold	Cooling	Misc			
	Value	Units		Value	Uni		Value	Units		Storage	Tower	Acces	ss.		
	27.3	KW	-	13.2	KW						1	1			
	28.7	KW		10.5							2	2			
rd		ll Coil						Load Assignm							
	nment Lo							-Group 4-							
efer	ence He	eating D	Ref B	egin En	d Begin	End	Begin End	Begin End	Begin End	Begin E	nd Begin	End	Begin E	nd Beg	in E
	1		1	. 3	6	10									
eat	Equip	Nu	mber	HW Pmp				quipment Par Energy Rate		Seq Order	Switch	Hot	Misc.		Den
eat ef umbe	Equip Code r Name BLR51	Nu Of Un 1	mber its	HW Pmp Full Ld Value 2.7	Units KW	Co V	ap'y alue Units 060 MBH	Energy Rate Value 1683	Units MBH	Seq Order	Switch	Hot	Misc.		Dem Lim
eat ef umbe	Equip Code r Name BLR51 BLR51	Nu Of Un 1	mber	HW Pmp Full Ld Value 2.7 2.7	Units KW KW	C: V: 1	ap'y alue Units 060 MBH 060 MBH	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef umbe	Equip Code r Name BLR51 BLR51	Nu Of Un 1	mber	HW Pmp Full Ld Value 2.7 2.7	Units KW KW	C.V. 1 1 1	ap'y alue Units 050 MBH 060 MBH	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef umbe ard yste	Equip Code er Name BLR51 BLR51	Nu Of Un 1 1	mber its Heat	HW Pmp Full Ld Value 2.7 2.7 Fan	Units KW KW a Equipment	CC V 1 1 ent Pa	ap'y alue Units 060 MBH 060 MBH rameters	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef ard yste et umbe	Equip Code er Name BLR51 BLR51	Nu Of Un 1 1 1 oling n	mber	HW Pmp Full Ld Value 2.7 2.7 Fan	Units KW KW	C.V. 1 1 1	ap'y alue Units 050 MBH 060 MBH	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef ard yste et umbe	Equip Code Fr Name BLR51 BLR51 69em Co	Nu Off Un 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	mber its Heat	HW Pmp Full Ld Value 2.7 2.7 Fan	Units KW KW a Equipment	CC V 1 1 ent Pa	ap'y alue Units 060 MBH 060 MBH rameters	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef ard yste	Equip Code Fr Name BLR51 BLR51 69em Co Er Fa	Nu Off Un 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	mber its Heat	HW Pmp Full Ld Value 2.7 2.7 Fan	Units KW KW a Equipment	CC V 1 1 ent Pa	ap'y alue Units 060 MBH 060 MBH rameters	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef umbe ard yste et	Equip Code Fr Name BLR51 BLR51 69em Co Er Fa EQ	Nu Off Un 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	mber its Heat	HW Pmp Full Ld Value 2.7 2.7 Fan	Units KW KW a Equipment	CC V 1 1 ent Pa	ap'y alue Units 060 MBH 060 MBH rameters	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef umbe yste et umbe	Equip Code F Name BLR51 BLR51 69em Co EY Fa EQ EQ	Oling n 4003 44003 44003	mber its Heat	HW Pmp Full Ld Value 2.7 2.7 Fan	Units KW KW a Equipment	CC V 1 1 ent Pa	ap'y alue Units 060 MBH 060 MBH rameters	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef umbe ard yste et umbe	Equip Code F Name BLR51 BLR51 69em Co EY Fa EQ EQ EQ	Oling 01 04 03 40 40 40 40 40 40 40 40	mber its Heat	HW Pmp Full Ld Value 2.7 2.7 Fan	Units KW KW a Equipment	CC V 1 1 ent Pa	ap'y alue Units 060 MBH 060 MBH rameters	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef umbe ard yste et umbe	Equip Code F Name BLR51 BLR51 69em Co EY Fa EQ EQ EQ	Nu Off Un 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	mber its Heat	HW Pmp Full Ld Value 2.7 2.7 Fan	Units KW KW a Equipment	CC V 1 1 ent Pa	ap'y alue Units 060 MBH 060 MBH rameters	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef ard yste et umbe	Equip Code T Name BLR51 BLR51 69 em Co er Fa EQ EQ EQ EQ EQ EQ EQ	oling n 4003 4003 4003 4003 4003 4003	mber its Heat	HW Pmp Full Ld Value 2.7 2.7 Fan	Units KW KW a Equipment	CC V 1 1 ent Pa	ap'y alue Units 060 MBH 060 MBH rameters	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef umbe ard yste et umbe	Equip Code T Name BLR51 BLR51 69 em Co er Fa EQ	oling n 4003 44003 44003 44003 44003 44003 44003	mber its Heat	HW Pmp Full Ld Value 2.7 2.7 Fan	Units KW KW a Equipment	CC V 1 1 ent Pa	ap'y alue Units 060 MBH 060 MBH rameters	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef ard yste et umbe	Equip Code Pr Name BLR51 BLR51 69 em Co Pr Fa EQ	Oling n 44003 44003 44003 44003 44003 44003 44003 44003 44003	mber its Heat	HW Pmp Full Ld Value 2.7 2.7 Fan	Units KW KW a Equipment	CC V 1 1 ent Pa	ap'y alue Units 060 MBH 060 MBH rameters	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef ard yste et umbe	Equip Code Pr Name BLR51 BLR51 69 em Co Pr Fa EQ	oling n 4003 44003 44003 44003 44003 44003 44003	mber its Heat	HW Pmp Full Ld Value 2.7 2.7 Fan	Units KW KW a Equipment	CC V 1 1 ent Pa	ap'y alue Units 060 MBH 060 MBH rameters	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef umbe	Equip Code Pr Name BLR51 BLR51 69 em Co Pr Fa EQ	Oling n 44003 44003 44003 44003 44003 44003 44003 44003 44003	mber its Heat	HW Pmp Full Ld Value 2.7 2.7 Fan	Units KW KW a Equipment	CC V 1 1 ent Pa	ap'y alue Units 060 MBH 060 MBH rameters	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef ard yste et umbe	Equip Code Fr Name BLR51 BLR51 69 Em Co Er EQ	Oling n 44003 44003 44003 44003 44003 44003 44003 44003 44003	mber its Heat	HW Pmp Full Ld Value 2.7 2.7 Fan	Units KW KW a Equipment	CC V 1 1 ent Pa	ap'y alue Units 060 MBH 060 MBH rameters	Energy Rate Value 1683 1683	Units MBH MBH	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Dem Lim
eat ef umbe ard yste et umbe	Equip Code IN Name BLR51 BLR51 69 EM Co EY EQ	Nu Off Un 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	its its Heat:	HW Pmp Full Id Value 2.7 2.7 Fan ing Re Fa	Units KW KW a Equipment	C.V. 1 1 ent Pa Exhau Fan	ap'y alue Units 060 MBH 060 MBH rameters st Auxili Supply	Energy Rate Value 1683 1683	Units MBH MBH Option t Venti	Seq Order Number 1 2	Switch over	Hot	Misc. Acc.		Den Lim

System Cool Heat Ret Exh Aux Room Opt Room Opt Set Fan Fan Fan Sup Exh Vent Cool Heat Aux Exh Vent Number KW KW KW KW KW KW KW Fan Fan Fan Fan Fan

1 4.9

Card 70	Card 70 Fa					ment K	W Over	rides					
		MAIN S	YSTEM-		OTH	ER SYS	TEM	D	EMAND	LIMIT	PRIORI	TY	
System	Cool	Heat	Ret	Exh	Aux	Room	Opt				Room	0pt	
Set	Fan	Fan	Fan	Fan	Sup	Exh	Vent	Cool	Heat	Aux	Exh	Vent	
Number	KW	KW	KW	KW	KM	KW	KW	Fan	Fan	Fan	Fan	Fan	
2	1.7												
3	8.6												
4	4.4									•			
5	4.1												
6	4.9												
7	8.7												
8	10.3												
9	2.1												
10	4.1												
												•	

Card 71-			Base	Utility P	arameters					
Base	Base	Hourly	Hourly			Equip	Demand			
Utility	Utility	Demand	Demand	Schedule	Energy	Reference	Limiting	Entering	Leaving	
Number	Descrip	Value	Units	Code	Type	Number	Number	Temp	Temp	
1	CHW LOADS	45.6	TONS	AVAIL	CHILL-LD	1				
2	HW LOADS	90.9	MBH	AVAIL	HOT-LD	1				
3	ALL OTHER LIGHTS	7.026	KW	OFICEL24	ELEC					
4	ESH-53	22.4	KW	ESH53	ELEC					

Card 7	4			Condenser	/ Cooling	g Tower Par	rameters				
	Cooling			Energy	Energy			Number	Percent	Low Spd	Low Spd
Tower	Tower	Capacity	Capacity	Consump	Consump	Fluid	Tower	Of	Airflow	Energy	Energy
Ref	Code	Value	Units	Value	Units	Туре	Type	Cells	Low Spd	Value	Units
1	EQ5100			5.3	KM	T-WATER	CTOWER	1			
2	EQ5100			5.3	KW	T-WATER	CTOWER	1			

Card	75				Misc	ellaneous A	ccessory					
	#1				#2				#3			
Misc	Equip	Energy	Energy	Sched	Equip	Energy	Energy	Sched	Equip	Energy	Energy	Sched
Ref	Code	Value	Units	Code	Code	Value	Units	Code	Code	Value	Units	Code
1	EQ5013	22.3	KW			,						
2	EQ5013	22.3	KW			•						
3	EQ5020	6.4	KW									
4	E05020	7.2	KW									

----- Load Section Alternative #3 -----

Card 19- Load Alternative -

Number Description
3 ECO B - OCCUPANCY SENSOR UPGRADE

ECO-B, TEST CELLS 1 & 2

Card 2	ard 20 General Room Parameters										
	Zone						Acoustic	Floor to	Duplicate	Duplicate	Perimeter
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number	Number	Descrip	Length	Width	Type	Height	Resistance	Height	Multiplier	Zone	
5	1	DEVICE RM. A-104	69	33	8	0	1	32			
10	2	DEVICE RM B-105	32	41	8	0	1	29			
15	3	RM 102, 103	59	36	8	0	1	32			
20	4	RM 109	26	44	8	0	1	16			
25	5	PT ELEC RM 201	27	37	8	0	1	17			
30	6	RM. 101,102,105	46	46	8	0	1	15			
35	7	RM 102	24	30	8	0	1	15			
40	8	RM 204,301,401	57	57	8	0	1	15			
45	9	HPOC, 501	25	24	8	0	1	15			
50	10	ETA CNTRL RM 103	25.5	13	8	0	1	15			

Card 21				eters						
	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location	No. Hrs	On
Number	Design DB	RH .	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor
5	70	50	70		70	70				NO
10	70	50	70		70	70				NO
15	70	50	70		70	70				NO
20	70	50	70		70	70				NO
25	70	50	70		70	70				NO
30	70	50	70		70	70				NO
35	70	50	70		70	70				NO
40	70	50	70		70	70				NO
45	70	50	70		70	70				NO
50	70	50	70		70	70				NO

Card 22				Roof Para	meters				
		Roof							
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof	Roof	Roof
Number	Number	Floor?	Length	Width	U-Value	Type	Direction	Tilt	Alpha
5	1	YES			0.1	23			
10	1	YES			0.1	23			
15	1		69	36	0.1	23			
25	1	YES			0.1	23			
30	1	YES			0.1	23			
45	1	YES			0.32	23			
50	1	YES			0.32	23			

Card 2	24			Wall P	arameters				
					Wall				Ground
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance
Number	. Number	Length	Height	U-Value	Туре	Direction	Tilt	Alpha	Multiplier
5	1	33	32	0.32	58	315			
5	2	69	32	0.32	58	45			
10	1	32	29	0.32	58	315			
10	2	29.5	29.5	0.32	58	225	•		
15	1	38	32	0.32	58	315			
15	2	38	32	0.32	58	135			
20	1	27	16	0.32	58	135			
25	1	27	17	0.32	58	135			
30	1	78	15	0.32	58	315			
30	2	43	15	0.32	58	45			
30	3	42	15	0.32	58	135			
30	4	30	15	0.32	58	225			
40	1	75	15	0.32	58	315			
40	2	75	15	0.32	58	45			
40	3	75	15	0.32	58	135			
40	4	75	15	0.32	58	225			
45	1	25	15	0.32	58	315			
45	2	24	15	0.32	58	45			
45	3	25	15	0.32	58	135			
45	4	24	15	0.32	58	225			
50	1	13	15	0.32	58	45			
50	2	25.5	15	0.32	58	135			
50	3	8	15	0.32	58	225			

Card 26				S	Chedules ·					
Room					Reheat	Cooling	Heating	Auxiliary	Room	Daylighting
Number	People	Lights	Ventilation	Infiltration	Minimum	Fans	Fan	Fan	Exhaust	Controls
5	OFFICEP1	OFICEL30								-
10	OFFICEP1	CLGONLY								
15	OFFICEP1	CLGONLY								
20	OFFICEP1	CLGONLY								
25	OFFICEP1	CLGONLY								
.30	OFFICEP1	OFICEL31								
35	OFFICEP1	CLGONLY								
40	OFFICEP1	OFICEL32								-
45	OFFICEP1	OFICEL33				·				
50	OFFICEP1	OFICEL35				••				

Card 27					Peopl	e and Ligh	ts				
							Lighting		Percent	Daylig	hting
Room	People	People	People	People	Lighting	Lighting	Fixture	Ballast	Lights to	Reference	Reference
Number	Value	Units	Sensible	Latent	Value	Units	Type	Factor	Ret. Air	Point 1	Point 2
5	2	PEOPLE	250	200	15118	WATTS	INCAND				-
10	2	PEOPLE	250	200	7454	WATTS	INCAND				

Card 27					Peopl	e and Ligh	ts				
							Lighting		Percent	Daylig	hting
Room	People	People	People	People	Lighting	Lighting	Fixture	Ballast	Lights to	Reference	Reference
Number	Value	Units	Sensible	Latent	Value	Units	Type	Factor	Ret. Air	Point 1	Point 2
15	4	PEOPLE	250	200	5084	WATTS	INCAND				
20	2	PEOPLE	250	200	2148	WATTS	INCAND				
25	5	PEOPLE	250	200	1856	WATTS	INCAND				
30	3	PEOPLE	250	200	5202	WATTS	INCAND				
35	5	PEOPLE	250	200	642	WATTS	INCAND				
40	10	PEOPLE	250	200	3026	WATTS	ASHRAE1				
45	4	PEOPLE	250	200	2296	WATTS	INCAND				
50	1	PEOPLE	250	200	558	WATTS	ASHRAE1				

Card 28				Mis	cellaneous	Equipment					
	Misc		Energy	Energy		Energy	Percent	Percent	Percent		
Room	Equipment	Equipment	Consump	Consump	Schedule	Meter	of Load	Misc. Load	Misc. Sens	Radiant	Optional
Number	Number	Descrip	Value	Units	Code	Code	Sensible	to Room	to Ret. Air	Fraction	Air Path
5	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
10	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
15	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
20	1	TESTING EQ.COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
25	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
30	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
35	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
40	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
45	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
50	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					

Card 29) 				Room Air	flows				
		Ventil	lation			Infil	tration			
Room	Coo	ling	Heat	ing	Coo	ling	Неа	ting	Reheat	Minimum
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
5	280	CFM	280	CFM						
10	100	CFM	100	CFM						
15	4700	CFM	4700	CFM						
20	0	CFM	0	CFM						
25	· o	CFM	0	CFM						
30	- 285	CFM	285	CFM						
35	790	CFM	790	CFM						
40	750	CFM	750	CFM						·
45	3600	CFM	3600	CFM						
50	360	CFM	360	CFM						

Card 30) <u>-</u>				Fan Airflo	ows				
		Ma	in			Auxi	lliary			
Room	Coo	ling	Heat	ing	Coo	ling+	Hea	ting	Room E	xhaust
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
5	5892	CFM	5892	CFM						
10	3344	CFM	3344	CFM						
15	10758	CFM	10758	CFM					600	CFM
20	15667	CFM	15667	CFM			•	:		
25	10386	CFM	10386	CFM						
30	2850	CFM	2850	CFM						
35	4080	CFM	4080	CFM						
40	12510	CFM	12510	CFM						
45	3600	CFM	3600	CFM						
50	1880	CFM	1880	CFM						

----- System Section Alternative #3 -----

Card 39- System Alternative

Number Description
3 EXISTING AIRSIDE EQUIPMENT

Card 40			Syste	т Туре				
			OPTION	AL VENTIL	ATION SYST	EM		
System		Ventil					Fan	
Set	System	Deck	Cooling	Heating	Cooling	Heating	Static	
Number	Type	Location	SADBVh	SADBVh	Schedule	Schedule	Pressure	
1	TRH							
2	TRH							
3	TRH							
4	VTCV							
5	VTCV							
6	VICV							
7	VTCV							
8	VTCV							
9	VTCV							
10	VTCV							
	_							

Card 41					Zone A	ssignmen	t					
System												
Set	Ref	#1	Ref	#2	Ref	#3	Ref	#4	Ref	#5	Ref	#6
Number	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End
1	1	1										
2	2	2										
3	3	3									٠.	
4	4	4										
5	5	5										
6	6	6										
7	7	7										

Card 41					Zone A	issignmen	10					
System												
Set	Ref	#1	Ref	#2	Ref	#3	Ref	#4	Ref	#5	Ref	#6
Number	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End
9	9	9										
10	10	10										

Card 42				Fan	. SP an	d Duct P	arameters	;			
System	Cool	Heat	Return	Mn Exh	Aux	Rm Exh	Cool	Return	Supply	Supply	Return
Set	Fan	Fan	Fan	Fan	Fan	Fan	Fan Mtr	Fan Mtr	Duct	Duct	Air
Number	SP	SP	SP	SP	SP	SP	Loc	Loc	Ht Gn	Loc	Path
1	1.5										
2	1.6										
3	1.9					.5					
4	1.6										
5	1.6										
6	4.6										
7	2.0										
8	2.0										
9	1.5										
10	2.0										

Card 43				Airflow D	esign Tem	peratures	3				
System	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Design	
Set	Cooling	Cooling	Heating	Heating	Cooling	Cooling	Preheat	Preheat	Room	Ht Rec	
Number	SADB	SADB	SADB	SADB	Lv DB	Lv DB	Lv DB	Lv DB	RH	Diff	
1	48.4	48.4									
2	48.4	48.4									
3	47.4	47.4									

Card 45				Equ	ipment Sche	dules					
System	Main		Direct	Indirect	Auxiliary	Main	Main			Auxiliary	
Set	Cooling		Evap	Evap	Cooling	Heating	Preheat	Reheat	Mech.	Heating	
Number	Coil	Economizer	Coil	Coil	Coil	Coil	Coil	Coil	Humidity	Coil	
1 .						OFF					
2					*	OFF					
3						OFF			•		
4						OFF					
5						OFF					

Card 46				- EMS/BAS	Schedules -				
System	Discrim	Night	Optimum	Optimum	DU	TY CYCLIN	G	System HR	Room HR
Set	Control	Purge	Start	Stop	On Period	Pattern	Maximum	Exhaust	Exhaust
Number	Schedule	Schedule	Schedule	Schedule	Schedule	Length	Off Time	Schedule	Schedule
1	AVAIL								

```
Card 46----- EMS/BAS Schedules -----
Set Control Purge Start Stop On Period Pattern Maximum Exhaust Exhaust
Number Schedule Schedule Schedule Schedule Length Off Time Schedule Schedule
   AVAIL
   AVAIL
----- Equipment Section Alternative #3 -----
Card 59----- Equipment Description / TOD Schedules ------
       Elec Consump Elec Demand Demand
                                                     ---- Demand Limit ---
Alternative Time of Day Time of Day Limit
                                                        Temperature
Number Schedule Schedule Max KW Alternative Description
                                                    Schedule Drift
                            EXISTING PRIMARY EQUIPMENT
Card 60----- Cooling Load Assignment-----
Load All Coil Cooling
Asgn Loads To Equipment -Group 1- -Group 2- -Group 3- -Group 4- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-
Ref Cool Ref Sizing Begin End               1 10
Card 62----- Cooling Equipment Parameters ------
Of --Capacity-- ----Energy---- --Capacity-- ----Energy---- Order Seq Limit
Ref Code
Num Name
        Units Value Units Value Units Value Units
                                              Value Units Num Type Number
1 EQ1001S 1 151 TONS
                      141 KW
                                                         1 PAR
2 EQ1001S 1 151 TONS 141 KW
                                                          2 PAR
Card 63------ Cooling Pumps and References ------
Cool ---CHILLED WATER---- ----CONDENSER----- ---HT REC or AUX---- Switch-
Ref Full Load Full Load Full Load Full Load Full Load Full Load over Cold Cooling Misc.
Num Value Units Value Units Value Units Control Storage Tower Access.
1 27.3 KW 13.2 KW
2 28.7 KW 10.5 KW
                                                1 1
2 2
Assignment Loads To Group 1- -Group 2- -Group 3- -Group 4- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-
Reference Heating Ref Begin End 1 1 1 3 6 10
```

Card 67	ard 67 Heating Equipment Parameters													
Heat	Equip	Number	HW Pmp				Energy		Seq	Switch				Demand
Ref	Code	Of	Full Ld		Cap'y		Rate		Order	over	Hot	Misc.		Limit
Number	Name	Units	Value	Units	Value	Units	Value	Units	Number	Control	Strg	Acc.	Cogen	Number
1	BLR51	1	2.7	KW	1060	MBH	1683	MBH	1			3		
2	BLR51	1	2.7	KW	1060	MBH	1683	MBH	2			4		

Card 69			Fan Equipm	ent Parame	ters		
System							
Set	Cooling	Heating	Return	Exhaust	Auxiliary	Room	Optional
Number	Fan	Fan	Fan	Fan	Supply	Exhaust	Ventilation
1	EQ4003						
2	EQ4003						
3	EQ4003						
4	EQ4003						
5	EQ4003						
6	EQ4003						
7	EQ4003						
8	EQ4003						
9	EQ4003						
10	EQ4003						

Card 70	Card 70 Far					ment K	W Over	rides				
		MAIN S	YSTEM-		OTH	ER SYS	TEM	D	EMAND	LIMIT	PRIORI	TY
System	Cool	Heat	Ret	Exh	Aux	Room	Opt				Room	Opt
Set	Fan	Fan	Fan	Fan	Sup	Exh	Vent	Cool	Heat	Aux	Exh	Vent
Number	KW	KW	KW	KW	KW	KW	KW	Fan	Fan	Fan	Fan	Fan
1	4.9											
2	1.7											
3	8.6											
4	4.4											
5	4.1											
6	4.9											
7	8.7											
8	10.3											
9	2.1											
10	4.1											

Card 71-	•••••		Base	Utility P	arameters				
Base	Base	Hourly	Hourly			Equip	Demand		
Utility	Utility	Demand	Demand	Schedule	Energy	Reference	Limiting	Entering	Leaving
Number	Descrip	Value	Units	Code	Type	Number	Number	Temp	Temp
1	CHW LOADS	45.6	TONS	AVAIL	CHILL-LD	1			

Card 71-			arameters	;					
Base	Base	Hourly	Hourly			Equip	Demand		
Utility	Utility	Demand	Demand	Schedule	Energy	Reference	Limiting	Entering	Leaving
Number	Descrip	Value	Units	Code	Туре	'Number	Number	Temp	Temp
2	HW LOADS	90.9	MBH	AVAIL	HOT-LD	1			
3	ALL OTHER LIGHTS	7.026	KW	OFICEL34	ELEC				
4	ESH-53	22.4	KW	ESH53	ELEC				
					•				

Card 7	4			Condenser	/ Coolin	g Tower Pa	arameters				
	Cooling			Energy	Energy			Number	Percent	Low Spd	Low Spd
Tower	Tower	Capacity	Capacity	Consump	Consump	Fluid	Tower	Of	Airflow	Energy	Energy
Ref	Code	Value	Units	Value	Units	Type	Type	Cells	Low Spd	Value	Units
1	EQ5100			5.3	KW	T-WATER	CTOWER	1			
2	EQ5100			5.3	KW	T-WATER	CTOWER	1			

Card	75			- 	Misce	ellaneous A	ccessory					
	#1				#2				#3			
Misc	Equip	Energy	Energy	Sched	Equip	Energy	Energy	Sched	Equip	Energy	Energy	Sched
Ref	Code	Value	Units	Code	Code	Value	Units	Code	Code	Value	Units	Code
1	EQ5013	22.3	KW									
2	EQ5013	22.3	KW									
3	EQ5020	6.4	KW									
4	EQ5020	7.2	KW									

----- Load Section Alternative #4 ------

ECO-C, TEST CELLS 1 & 2

Card 19- Load Alternative -Number Description

4 ECO C - ENERGY MANAGEMENT SYSTEM

	Zone						Acoustic	Floor to	Duplicate	Duplicate	Perimeter
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number	Number	Descrip	Length	Width	Type	Height	Resistance	Height	Multiplier	Zone	
5	1	DEVICE RM. A-104	69	33	8	0	1	32			
10	2	DEVICE RM B-105	32	41	8	0	1	29			
15	3	RM 102, 103	59	36	8	0	1	32			
20	4	RM 109	26	44	8	0	1	16			
25	5	PT ELEC RM 201	27	37	8	0	1	17			
30	6	RM. 101,102,105	46	46	8	0	1	15			
35	7 ,	RM 102	24	30	8	0	1	15			
40	8	RM 204,301,401	57	57	8	0	ī	15			

Card 20				Genera	l Room	Paramete	rs				
	Zone						Acoustic	Floor to	Duplicate	Duplicate	Perimeter
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number	Number	Descrip	Length	Width	Type '	Height	Resistance	Height	Multiplier	Zone	
45	9	HPOC, 501	25	24	8	0	1	15			
50	10	ETA CNTRL RM 103	25.5	13	8	0	1	15			

Card 21				Therm	ostat Param	eters				
	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location	No. Hrs	On
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor
5	70	50	70		70	70				NO
10	70	50	70		70	70				NO
15	70	50	70		70	70				NO
20	70	50	70		70	70				NO
25	70	50	70		70	70				NO
30	70	50	70		70	70				NO
35	70	50	70		70	70				NO
40	70	50	70		70	70				NO
45	70	50	70		70	70				NO
50	70	50	70		70	70				NO

Card 22				Roof Para	meters				
		Roof							
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof	Roof	Roof
Number	Number	Floor?	Length	Width	U-Value	Туре	Direction	Tilt	Alpha
5	1	YES			0.1	23			
10	1	YES			0.1	23			
15	1		69	36	0.1	23			
25	1	YES			0.1	23			
30	1	YES			0.1	23			
45	1	YES			0.32	23			
50	1	YES			0.32	23			

Card 24				Wall Pa	arameters Wall				Ground
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance
Number	Number	Length	Height	U-Value	Type	Direction	Tilt	Alpha	Multiplier
5	1	33	32	0.32	58	315			
5	2	69	32	0.32	58	45			
10	1	32	29	0.32	58	315			
10	2	29.5	29.5	0.32	58	225			
15	1	38	32	0.32	58	315			
15	2	38	32	0.32	58	135			
20	1	27	16	0.32	58	135			

Card 24-				- Wall Pa	arameters				
					Wall				Ground
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance
Number	Number	Length	Height	U-Value	Туре	Direction	Tilt	Alpha	Multiplier
25	1	27	17	0.32	58	135			
30	1	78	15	0.32	58	315			
30	2	43	15	0.32	58	45			
30	3	42	15	0.32	58	135	•		
30	4	30	15	0.32	58	225			
40	1	75	15	0.32	58	315			
40	2	75	15	0.32	58	45			
40	3	75	15	0.32	58	135			
40	4	75	15	0.32	58	225			
45	1	25	15	0.32	58	315			
45	2	24	15	0.32	58	45			
45	3	25	15	0.32	58	135			
45	4	24	15	0.32	58	225			÷
50	1	13	15	0.32	58	45			
50	2	25.5	15	0.32	58	135			
50	3	8	15	0.32	58	225			

Card 26				S	chedules -					
Room					Reheat	Cooling	Heating	Auxiliary	Room	Daylighting
Number	People	Lights	Ventilation	Infiltration	Minimum	Fans	Fan	Fan	Exhaust	Controls
5	OFFICEP1	OFICEL30	OFFICEP1							
10	OFFICEP1	CLGONLY	OFFICEP1							
15	OFFICEP1	CLGONLY	OFFICEP1							
20	OFFICEP1	CLGONLY	OFFICEP1							
25	OFFICEP1	CLGONLY	OFFICEP1							
30	OFFICEP1	OFICEL31	OFFICEP1							
35	OFFICEP1	CLGONLY	OFFICEP1							
40	OFFICEP1	OFICEL32	OFFICEP1							
45	OFFICEP1	OFICEL33	OFFICEP1							
50	OFFICEP1	OFICEL35	OFFICEP1							

Card 27					Peopl	e and Ligh	ts				
_							Lighting		Percent	Daylig	hting
Room	People	People	People	People	Lighting	Lighting	Fixture	Ballast	Lights to	Reference	Reference
Number	Value	Units	Sensible	Latent	Value	Units	Туре	Factor	Ret. Air	Point 1	Point 2
5	2	PEOPLE	250	200	15118	WATTS	INCAND				
10	2	PEOPLE	250	200	7454	WATTS	INCAND				
15	4	PEOPLE	250	200	5084	WATTS	INCAND				
20	2	PEOPLE	250	200	2148	WATTS	INCAND				
25	5	PEOPLE	250	200	1856	WATTS	INCAND				
30	3	PEOPLE	250	200	5202	WATTS	INCAND				
35	5 ,	PEOPLE	250	200	642	WATTS	INCAND				
40	10	PEOPLE	250	200	3026	WATTS	ASHRAE1				

Card 27					Peopl	e and Ligh	nts				
							Lighting		Percent	Daylig	hting
Room	People	People	People	People	Lighting	Lighting	Fixture	Ballast	Lights to	Reference	Reference
Number	Value	Units	Sensible	Latent	Value	Units	Type	Factor	Ret. Air	Point 1	Point 2
45	4	PEOPLE	250	200	2296	WATTS	INCAND				
50	1	PEOPLE	250	200	558	WATTS	ASHRAE1				

Card 28				Mis	cellaneous	Equipment					
	Misc		Energy	Energy		Energy	Percent	Percent	Percent		
Room	Equipment	Equipment	Consump	Consump	Schedule	Meter	of Load	Misc. Load	Misc. Sens	Radiant	Optional
Number	Number	Descrip	Value	Units	Code	Code	Sensible	to Room	to Ret. Air	Fraction	Air Path
5	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
10	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
15	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
20	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
25	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
30	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
35	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
40	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
45	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
50	1	TESTING EQ, COMP.	2,46	WATT-SF	OFFICEM1	ELEC					

Card 29					Room Airflo	ows				
		Ventila	tion			Infiltr	ration			
Room	Coolin	g	Heatin	g	Coolir	1g	Heati	ng	Reheat Mir	nimum
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
5	20	CFM-P	20	CFM-P						
10	20	CFM-P	20	CFM-P						
15	20	CFM-P	20	CFM-P						
20	0	CFM	0	CFM						
25	0	CFM	0	CFM						
30	160	CFM	160	CFM						
35	140	CFM	140	CFM						
40	20	CFM-P	20	CFM-P						
45	3600	CFM	3600	CFM						
50	20	CFM-P	20	CFM-P						

Card 30	1				Fan Airfl	ows				
		Ma	in			Auxi	liary			
Room	Coo	ling	Hea	ting	Coo	ling	Hea	ting	Room E	xhaust
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
5	5892	CFM	5892	CFM						
10	3344	CFM	3344	CFM						
15	10758	CFM	10758	CFM					600	CFM
20	15667	CFM	15667	CFM						

Card 30					Fan Airflo	ws				
		Ma	in			Aux	iliary			
Room	Cool	ing	Heat	ing	Coo	ling	Hea	ing	Room E	xhaust
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
25	10386	CFM	10386	CFM						
30	2850	CFM	2850	CFM						
35	4080	CFM	4080	CFM						
40	12510	CFM	12510	CFM			•			
45	3600	CFM	3600	CFM						
50	1880	CFM	1880	CFM						

------ System Section Alternative #4 ------

Card 39- System Alternative Number Description

AIRSIDE EQ WITH NEW CONTROLS

Card 40----- System Type -----OPTIONAL VENTILATION SYSTEM-----Ventil System System Deck Cooling Heating Cooling Heating Static Set Location SADBVh SADBVh Schedule Schedule Pressure Number Type TRH 2 TRH TRH 3 4 VTCV 5 VTCV 6 VTCV VTCV 8 9 VTCV 10 VTCV

System												
Set	Ref	#1	Ref	#2	Ref	#3	- Ref	#4	Ref	#5	Ref	#6
Number	Begin	End										
1	1	1										
2	2	2										
3	3	3										
4	4	4										
5	5	5										
6	_6	6										
7	7	7										

Card 41 Zone Ass							ıt					
System												
Set	Ref #1		Ref #2		Ref #3		Ref #4		Ref #5		Ref #6	
Number	Begin	End										
8	8	8										
9	9	9										
10	10	10										

Card 42	!	-		Fan	SP an	d Duct P	arameters				
System	Cool	Heat	Return	Mn Exh	Aux	Rm Exh	Cool	Return	Supply	Supply	Return
Set	Fan	Fan	Fan	Fan	Fan	Fan	Fan Mtr	Fan Mtr	Duct	Duct	Air
Number	SP	SP	SP	SP	SP	SP	Loc	Loc	Ht Gn	Loc	Path
1	1.5										
2	1.6										
3	1.9					.5					
4	1.6										
5	1.6										
6	4.6										
7	2.0										
8	2.0										
9	1.5										
10	2.0										

Card 4	4					S	ystem Opt	ions					
System	Econ	Econ	Max Pct	Direct	Indirect	1st Stage	Exhaust Air Heat Recovery						
Set	Туре	On	Outside	Evap	Evap	Evap	Fan	Effectiv	reness	Control	Type	Exh-Side	Deck
Number	Flag	Point	Air	Cooling	Cooling	Cooling	Cycling	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2
1	DRY-BULB	65	100										
2	DRY-BULB	65	100										
3	DRY-BULB	65	100										
8	DRY-BULB	65	100										

Card 45 Equipment Schedules												
System	Main		Direct	Indirect	Auxiliary	Main	Main			Auxiliary		
Set	Cooling		Evap	Evap	Cooling	Heating	Preheat	Reheat	Mech.	Heating _		
Number	Coil	Economizer	Coil	Coil	Coil	Coil	Coil	Coil	Humidity	Coil		
1	AVAIL	AVAIL				OFF'						
2	AVAIL	AVAIL				OFF	•					
3	AVAIL	AVAIL				OFF						
4						OFF						
5						OFF						
8	AVAIL	AVAIL										

System Set Number 1 2	Conti Conti r Sched AVAII AVAII	rim Nigh rol Purg dule Sche	t Optin e Stari dule Sched	mum Optimu t Stop dule Schedu	mDM On Period le Schedule	JTY CYCLING Pattern Max Length Off	Sy simum Ex Time Sc	stem HR haust				
Card	59			Equipme	nt Descriptio	n / TOD Schedu	ıles				 -	-
		Elec Cons	ump Elec	Demand Dema	nd				Det	mand Li	mit	-
Alter	native			of Day Limi						-	eratur	e
Numbe 4	r	Schedule	Sched	ule Max		ve Description Q WITH NEW COM			Schedul	e D	rift	
Load	All Co Loads Cool R	il Coolin	ig Nent -Grou	p 1Group End Begin	2Group 3	Group 4-	-Group 5	Group	6Gro	up 7-	-Group	8Group 9- End Begin End
Cool	Equip	Num		COOLING		pment Paramet	EAT RECOV	ERY		Seq		Demand
Cool Ref	Equip Code	Num Of		COOLING	Energy		EAT RECOV				Seq	Demand
Cool Ref Num	Equip	Num Of Units	Capacity Value Uni	COOLING	Energy ue Units	H	EAT RECOV	ERY Energy		Seq Order	Seq	Demand Limit
Cool Ref Num 1	Equip Code Name EQ1001S	Num Of Units	Capacity Value Uni	COOLING ts Valu	Energy ne Units KW	H	EAT RECOV	ERY Energy		Seq Order Num	Seq Type	Demand Limit
Cool Ref Num 1 2 Card Cool Ref	Equip Code Name EQ1001S EQ1001S	Num Of Units 1 1 1	Capacity Value Uni 151 TON 151 TON	ts Valu S 141 S 141 C Coolin	Energy Energy KW KW KW THE PUMPS and F	H	EAT RECOVI	ERYEnergy	cooling	Seq Order Num 1 2	Seq Type PAR PAR	Demand Limit
Cool Ref Num 1 2 Card Cool Ref Num 1	Equip Code Name EQ1001S EQ1001S 63CHII Full Lc Value 27.3 28.7	Num Of Units 1 1 1 LED WATER- AND Full I Units KW KW Load Shed	Capacity Value Uni 151 TON 151 TON Coad Full Value 13.2 10.5	ts Values	Energy ENERGY ENERGY ENERGY TO SEE THE SEE	HCapacity Value Uni References RC or AUX Rd Full Load Units Otions Cond	EAT RECOVI	ERYEnergy alue Un Cold Storage	Cooling Tower 1	Seq Order Num 1 2 Misc. Access 1 2	Seq Type PAR PAR	Demand Limit

BLR51 1 2.7 KW 1060 MBH

Number Name Units Value Units

BLR51 1 2.7 KW

Value Units Number Control Strg Acc. Cogen Number

1

2

3

```
Card 65----- Heating Load Assignment
Load All Coil
Assignment Loads To Group 1- -Group 2- -Group 3- -Group 4- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-
Reference Heating Ref Begin End 1 1 3 6 10
Card 67----- Heating Equipment Parameters -----
                                  Energy Seq Switch
Heat Equip Number HW Pmp
                                             Order over Hot Misc.
                                    Rate
Ref Code Of Full Ld
                         Cap'y
```

1683

1683

MBH

MBH

Value Units

1060 MBH

Card 69			Fan Equip	ment Parame	eters		
Set	Cooling	Heating	Return	Exhaust	Auxiliary	Room	Optional
Number	Fan	Fan	Fan	Fan	Supply	Exhaust	Ventilation
1	EQ4003		•				
2	EQ4003						
3	EQ4003						
4	EQ4003						
5	EQ4003						
6	EQ4003						
7	EQ4003						
8	EQ4003						
9	EQ4003						
10	EQ4003						

MAIN SYSTEM OTHER SYSTEM DEMAND LIMIT PRIORITY-	
System Cool Heat Ret Exh Aux Room Opt Room Op	t
Set Fan Fan Fan Sup Exh Vent Cool Heat Aux Exh Ve	nt
Number KW KW KW KW KW KW Fan Fan Fan Fan Fa	n
1 4.9	
2 1.7	
3 8.6	
4. 4.4	
5 4.1	
6 4.9	
7 8.7	
8 10.3	
9 2.1	
10 4.1	

Card 71-			Base	Utility P	arameters				
Base	Base	Hourly	Hourly			Equip	Demand		
Utility	Utility	Demand	Demand	Schedule	Energy	Reference	Limiting	Entering	Leaving
Number	Descrip	Value	Units	Code	Туре	Number	Number	Temp	Temp
1	CHW LOADS	45.6	TONS	AVAIL	CHILL-LD	1			
2	HW LOADS	90.9	MBH	AVAIL	HOT-LD	1			
3	ALL OTHER LIGHTS	7.026	KW	OFICEL34	ELEC				

Card 7	4			Condenser	/ Coolin	g Tower P	arameters				
	Cooling			Energy	Energy			Number	Percent	Low Spd	Low Spd
Tower	Tower	Capacity	Capacity	Consump	Consump	Fluid	Tower	Of	Airflow	Energy	Energy
Ref	Code	Value	Units	Value	Units	Туре	Туре	Cells	Low Spd	Value	Units
1	EQ5100			5.3	KW	T-WATER	CTOWER	1			
2	EQ5100			5.3	KW	T-WATER	CTOWER	1			

Card	75				Misc	ellaneous A	ccessory					
	#1				#2				#3			
Misc	Equip	Energy	Energy	Sched	Equip	Energy	Energy	Sched	Equip	Energy	Energy	Sched
Ref	Code	Value	Units	Code	Code	Value	Units	Code	Code	Value	Units	Code
1	EQ5013	22.3	KW									
2	EQ5013	22.3	KW									
3	EQ5020	6.4	KW									
4	E05020	7 2	ĸw									

01 Card - Job Information _____

Project: EEAP ENERGY STUDY - HELSTF

Location: WHITE SANDS - ALAMOGORDO, NEW MEXICO

Client: FORT WORTH CORPS OF ENGINEERS Program User: HUITT-ZOLLARS, INC.

Comments: TEST CELL # 1 AND TEST CELL # 2

Card 08------ Climatic Information ------

Summer Winter Summer Summer Winter Summer Winter Weather Clearness Clearness Design Design Design Building Ground Ground Code Number Number Dry Bulb Wet Bulb Dry Bulb Orientation Reflect Reflect

HOLLOMAN

----- Load Section Alternative #1 ------

ECO-E, TEST CELLS 1 & 2

Card 19- Load Alternative -

Number Description

ECO E - HIGH EFFICIENCY MOTORS

Card 2)			Genera	al Room	Paramete	rs				
	Zone						Acoustic	Floor to	Duplicate	Duplicate	Perimeter
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number	Number	Descrip	Length	Width	Type	Height	Resistance	Height	Multiplier	Zone	
5	1	DEVICE RM. A-104	69	33	8	0	1	32			
10	2	DEVICE RM B-105	32	41	8	0	1	29			
15	3	RM 102, 103	59	36	8	0	1	32			
20	4	RM 109	26	44	8	0	1	16			
25	5	PT ELEC RM 201	27	37	8	0	1	17			
30	6	RM. 101,102,105	46	46	8	0	1	15			
35	7	RM 102	24	30	8	0	1	15			
40	8	RM 204,301,401	57	57	8	0	1	15			
45	9	HPOC, 501	25	24	8	0 .	1	15			
50	10	ETA CNTRL RM 103	25.5	13	8	0	1	15			

Card 21				Therm	ostat Param	eters				
	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location	No. Hrs	On
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor
5	70	50	70		70	70				NO

Card 21	Card 21 Thermostat Parameters									
	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'staț	T'stat	Location	No. Hrs	On
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor
10	70	50	70		70	70				NO
15	70	50	70		70	70				NO
20	70	50	70		70	70 ,				NO
25	70	50	70		70	70				NO :
30	70	50	70		70	70				NO
35	70	50	70		70	70				NO
40	70	50	70		70	70				NO
45	70	50	70		70	70				NO
50	70	50	70		70	70				NO

Card 22	ard 22 Roof Parameters												
		Roof											
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof	Roof	Roof				
Number	Number	Floor?	Length	Width	U-Value	Type	Direction	Tilt	Alpha				
5	1	YES			0.1	23							
10	1	YES	•		0.1	23							
15	1		69	36	0.1	23							
25	1	YES			0.1	23							
30	1	YES			0.1	23							
45	1	YES			0.32	23							
50	1	YES			0.32	23							

Card 24				Wall Pa	arameters				
					Wall				Ground
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance
Number	Number	Length	Height	U-Value	Туре	Direction	Tilt	Alpha	Multiplier
5	1	33	32	0.32	58	315			
5	2	69	32	0.32	58	45			
10	1	32	29	0.32	58	315			
10	2	29.5	29.5	0.32	58	225			
15	1	38	32	0.32	58	315			
15	2	38	32	0.32	58	135			
20	1	27	16	0.32	-58	135			
25	1	27	17	0.32	58	135			•
30	1	78	1.5	0.32	58	315			
30	2	43	15	0.32	58	45			
30	3	42	15	0.32	58	135			
30	4	30	15	0.32	58	225			
40	1	75	15	0.32	58	315			
40	2	75	15	0.32	58	45			
40	3	75	15	0.32	58	135			
40	4	75	15	0.32	58	225			

Card 24	Card 24 Wall Parameters Ground												
							Ground						
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance				
Number	Number	Length	Height	U-Value	Туре	Direction	Tilt	Alpha	Multiplier				
45	1	25	15	0.32	58	315							
45	2	24	15	0.32	58	45							
45	3	25	15	0.32	58	135							
45	4	24	15	0.32	58	225							
50	1	13	15	0.32	58	45							
50	2	25.5	15	0.32	58	135							
50	3	8	15	0.32	58	225							

Card 26				S	chedules -					
Room					Reheat	Cooling	Heating	Auxiliary	Room	Daylighting
Number	People	Lights	Ventilation	Infiltration	Minimum	Fans	Fan	Fan	Exhaust	Controls
5	OFFICEP1	OFICEL30	OFFICEP1							
10	OFFICEP1	CLGONLY	OFFICEP1							
15	OFFICEP1	CLGONLY	OFFICEP1							
20	OFFICEP1	CLGONLY	OFFICEP1							
25	OFFICEP1	CLGONLY	OFFICEP1							
30	OFFICEP1	OFICEL31	OFFICEP1							
35	OFFICEP1	CLGONLY	OFFICEP1							
40	OFFICEP1	OFICEL32	OFFICEP1							
45	OFFICEP1	OFICEL33	OFFICEP1							
50	OFFICEP1	OFICEL35	OFFICEP1							

Card 27	· · · · · · · · · · · · · · · · · · ·												
							Lighting		Percent	Daylig	hting		
Room	People	People	People	People	Lighting	Lighting	Fixture	Ballast	Lights to	Reference	Reference		
Number	Value	Units	Sensible	Latent	Value	Units	Type	Factor	Ret. Air	Point 1	Point 2		
5	2	PEOPLE	250	200	15118	WATTS	INCAND						
10	2	PEOPLE	250	200	7454	WATTS	INCAND						
15	4	PEOPLE	250	200	5084	WATTS	INCAND						
20	2	PEOPLE	250	200	2148	WATTS	INCAND						
25	5	PEOPLE	250	200	1856	WATTS	INCAND						
30	3	PEOPLE	250	200	5202	WATTS	INCAND						
35	5	PEOPLE	250	200	642	WATTS	INCAND						
40	10	PEOPLE	250	200	3026	WATTS	ASHRAE1						
45	4	PEOPLE	250	200	2296	WATTS	INCAND						
50	1	PEOPLE	250	200	558	WATTS	ASHRAE1						

Card 28			Miscellaneous Equi			Equipment					
	Misc		Energy	Energy		Energy	Percent	Percent	Percent		
Room	Equipment	Equipment	Consump	Consump	Schedule	Meter	of Load	Misc. Load	Misc. Sens	Radiant	Optional
Number	Number	Descrip	Value	Units	Code	Code	Sensible	to Room	to Ret. Air	Fraction	Air Path
5	1	TESTING EO.COMP.	2.46	WATT-SF	OFFICEM1	ELEC					

Card 28	}			Mis	cellaneous	: Equipment					
	Misc		Energy	Energy		Energy	Percent	Percent	Percent		
Room	Equipment	Equipment	Consump	Consump	Schedule	Meter	of Load	Misc. Load	Misc. Sens	Radiant	Optional
Number	Number	Descrip	Value	Units	Code	Code	Sensible	to Room	to Ret. Air	Fraction	Air Path
10	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
15	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
20	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
25	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC			4		
30	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
35	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
40	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
45	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					
50	1	TESTING EQ, COMP.	2.46	WATT-SF	OFFICEM1	ELEC					

Card 29	rd 29				Room Air	flows				
		Venti	lation			Infil	tration			
Room	Cool	ing	Hea	ting	Coo	ling	Hea	ting	Reheat	Minimum
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
5	20	CFM-P	20	CFM-P						
10	20	CFM-P	20	CFM-P						
15	20	CFM-P	20	CFM-P						
20	0	CFM	0	CFM						
25	0	CFM	0	CFM						
30	160	CFM	160	CFM						
35	140	CFM	140	CFM						
40	20	CFM-P	20	CFM-P						
45	3600	CFM	3600	CFM						
50	20	CFM-P	20	CFM-P						

Card 30				1	Fan Airflo	ws				
			.n							
Room	Cooli	.ng	Heati	ng	Cool	ing	Heat	ing	Room Ex	haust
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
5	5892	CFM	5892	CFM						
10	3344	CFM	3344	CFM						
15	10758	CFM	10758	CFM					600	CFM
20	15667	CFM	15667	CFM -						
25	10386	CFM	10386	CFM						
30	2850	CFM	2850	CFM			•			
35	4080	CFM	4080	CFM						
40	12510	CFM	12510	CFM						
45	3600	CFM	3600	CFM						
50	1880	CFM	1880	CFM						

----- System Section Alternative #1 -----

Card 39- System Alternative Number Description

1 AIRSIDE EQ WITH NEW MOTORS

Card 40----- System Type -----------OPTIONAL VENTILATION SYSTEM-----System Ventil Set System Deck Cooling Heating Cooling Heating Static Location SADBVh SADBVh Schedule Schedule Pressure Number Type 1 TRH TRH TRH 3 VTCV 4 VTCV VTCV 6 VTCV VTCV VTCV VTCV

Card 41					Zone A	Assignmer	nt					
System												
Set	Ref	#1	Ref	#2	Ref	#3	Ref	#4	Ref	#5	Ref	#6
Number	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End
1	1	1										
2	2	2										
3	3	3										
4	4	4										
5	5	5										
6	6	6										
7	7	7										
8	8	8										
9	9	9										
10	10	10			•							

Card 42 Fan SP and Duct Parameters												
System	Cool	Heat	Return	Mn Exh	Aux	Rm Exh	Cool	Return	Supply	Supply	Return	
Set	Fan	Fan	Fan	Fan	Fan	Fan	Fan Mtr	Fan Mtr	Duct	Duct	Air	
Number	SP	SP	SP	SP	SP	SP	Loc	Loc	Ht Gn	Loc	Path	
1	1.5											
2	1.6											
3	1.9					.5						
4	1.6											
5	1.6											
6	4.6											

```
Card 42----- Fan SP and Duct Parameters-----
 System Cool Heat Return Mn Exh Aux Rm Exh Cool Return Supply Supply Return
    Fan Fan Fan Fan Fan Mtr Fan Mtr Duct Duct Air
 Number SP SP SP SP SP
                               Loc Loc
                                          Ht Gn Loc
     2.0
     2.0
     1.5
 10 2.0
 Card 44----- System Options -----
 System Econ Econ Max Pct Direct Indirect 1st Stage ---------- Exhaust Air Heat Recovery -------
         On Outside Evap Evap Evap Fan -- Effectiveness -- -- Control Type -- -- Exh-Side Deck --
 Set Type
         Point Air Cooling Cooling Cooling Cycling Stage 1 Stage 2 Stage 2 Stage 2 Stage 2
 Number Flag
   DRY-BULB 65 100
    DRY-BULB 65
             100
    DRY-BULB 65 100
   DRY-BULB 65 100
Card 45----- Equipment Schedules -----
System Main
           Direct Indirect Auxiliary Main
                                          Main
Set Cooling
                 Evap
                               Cooling Heating Preheat Reheat Mech. Heating
                        Evap
Number Coil Economizer Coil
                      Coil
                               Coil
                                     Coil
                                          Coil Coil Humidity Coil
   AVAIL AVAIL
1
                                      OFF
2
     AVAIL AVAIL
                                      OFF
     AVAIL AVAIL
3
                                      OFF
4
                                      OFF
5
                                      OFF
     AVAIL
          AVAIL
Card 46----- EMS/BAS Schedules -----
Control Purge Start Stop
                            On Period Pattern Maximum Exhaust
Number Schedule Schedule Schedule Schedule Length Off Time Schedule Schedule
1
     AVAIL
2
     AVAIL
     AVAIL
----- Equipment Section Alternative #1 -----
Card 59----- Equipment Description / TOD Schedules -----
       Elec Consump Elec Demand Demand
                                                       ---- Demand Limit ---
Alternative Time of Day Time of Day Limit
                                                          Temperature
      Schedule Schedule Max KW Alternative Description
                                                       Schedule Drift
                             PRIMARY EQ WITH NEW MOTORS
```

G3													
						- Cooling	Load Assig	nment					
		Cooling											
													8Group 9-
Ref		Sizing			n End	Begin End	Begin End	l Begin Er	nd Begin	End Beg	in End	Begin E	nd Begin End
1	1		1	10									
S3													
							ent Parame						
	Equip							HEAT RECOV	ÆRY		Seq	1	Demand
	Code		Capacity-				Capacit	у	Energy	/	Order	Seq :	Limit
	Name		lue Unit			Units	Value Un	its \	/alue (Jnits	Num	Type 1	Number
	EQ1001S					KW					1	PAR	
2	EQ1001S	1 15	ons Tons	14	1 1	KW					2	PAR	
Card	63			Cool	ing Pump	s and Ref	erences						
							or AUX						
			d Full L	oad Full	Load I	Full Load	Full Load	over	Cold	Cooling	Misc.		
	Value	Units	Value	Unit	s 1	/alue	Units	Control	Storage	Tower	Access	s.	
	26.8	KW	13.0							1	1		
2	28.1	KW	10.6	KW						2	2		
Card	64			Cooli	ng Equip	ment Opti	ons						
Cool	Max Lo	oad		Free		Cond	Cond	Cond Rej	Cond Re	j Cond F	Rej		
Ref	CW SI	ned	Evap	Cooling	Heat	Entering	Min Oper	To Ref	To Ref	@ HW			
Num	Reset E	conomizer	Precool	Type	Source	Temp	Temp	Туре	Number	Temp			
1	10					85	55						
2	10					85	55						
Card	65				I	leating Lo	ad Assignm	ent				·	
Load	Al:	l Coil											
Assig	nment Loa	ads To	-Group 1	Group	2Gr	oup 36	Group 4-	-Group 5-	-Group 6	Group	70	Froup 8-	-Group 9-
Refer	ence Hea	ating Ref	Begin En	d Begin	End Beg	in End B	egin End	Begin End	Begin En	d Begin	End Be	gin End	Begin End
1	1		1 3		10								-
								,					
							•						•
Card	67				Н∈	ating Equ	ipment Par	ameters					
Heat	Equip		HW Pmp			2 240.	Energy			Switch			Domand
Ref	Code	Of	Full Ld		Cap'y	•	Rate				Uot :	(i.a.a	Demand
	r Name	Units		Units		Units	Value	Ilnit -				lisc.	Limit
1	BLR51	1	2.3	KW	1060	MBH		Units		Control	_		gen Number
2	BLR51	1	2.3	KW	1060	мвн	1683	MBH	1		3		
_		•	٠. ٠	1517	1000	riori	1683	MBH	2		4	:	

```
Card 69----- Fan Equipment Parameters -----
System
        Cooling Heating Return
Set
                                Exhaust Auxiliary Room
                                                        Optional
Number
        Fan
                Fan
                        Fan
                                        Supply
                                                 Exhaust Ventilation
1
        EQ4003
2
        EQ4003
3
        EQ4003
4
        EQ4003
5
        EQ4003
        EQ4003
        EQ4003
        EQ4003
        EQ4003
10
        EQ4003
```

Card 70	an Equipment KW Overrides												
		MAIN S	YSTEM-		OTE	ER SYS	TEM	E	EMAND	LIMIT	PRIORI	TY	
System	Cool	Heat	Ret	Exh	Aux	Room	Opt				Room	Opt	
Set	Fan	Fan	Fan	Fan	Sup	Exh	Vent	Cool	Heat	Aux	Exh	Vent	
Number	KW	KW	KW	KW	KW	KW	KW	Fan	Fan	Fan	Fan	Fan	
1	4.9												
2	1.4												
3	8.5												
4	4.4												
5	3.7												
6	4.7												
7	7.8												
8	9.9												
9	2.0												
10	4.2												

Card 71-									
Base	Base	Hourly	Hourly			Equip	Demand		
Utility	Utility	Demand	Demand	Schedule	Energy	Reference	Limiting	Entering	Leaving
Number	Descrip	Value	Units	Code	Туре	Number	Number	Temp	Temp
1	CHW LOADS	45.6	TONS	AVAIL	CHILL-LD	1		•	
2 .	HW LOADS	90.9	MBH -	AVAIL	HOT-LD	1			
3	ALL OTHER LIGHTS	7.026	KW	OFICEL34	ELEC				

Card 7			- Condenser / Cooling Tower Parameters								
	Cooling			Energy	Energy					Low Spd	Low Spd
Tower	Tower	Capacity	Capacity	Consump	Consump	Fluid	Tower	Of	Airflow	Energy	Energy
Ref	Code	Value	Units	Value	Units	Туре	Туре	Cells	Low Spd	Value	Units
1	EQ5100			4.7	KW	T-WATER	CTOWER	1	•		
2	EQ5100			4.7	KW	T-WATER	CTOWER	1			

```
Card 75----- Miscellaneous Accessory
    #1
                           #2
                                                   #3
Misc Equip
         Energy Energy Sched Equip Energy Energy Sched Equip Energy Energy Sched
Ref Code
         Value Units Code Code Value Units Code Code Value Units Code
1
   EQ5013
         21.6
                KW
2
   EQ5013 21.6
                KW
   EQ5020 6.3 KW
3
   EQ5020 7.1
------ Equipment Section Alternative #2 -----
            ECO-G, TEST CELLS 1 & 2
Card 59----- Equipment Description / TOD Schedules -----
       Elec Consump Elec Demand Demand
                                                       ---- Demand Limit ---
Alternative Time of Day Time of Day Limit
Number Schedule Schedule Max KW Alternative Description
                             NEW CHW & CND SYSTEM
Card 60----- Cooling Load Assignment-----
Load All Coil Cooling
Asgn Loads To Equipment -Group 1- -Group 2- -Group 3- -Group 4- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-
Ref Cool Ref Sizing Begin End                1 10
Card 62----- Cooling Equipment Parameters -----
Cool Equip Num ------COOLING------- Seq
Ref Code Of --Capacity-- ----Energy----
                                    --Capacity-- ----Energy---- Order Seq Limit
Num Name Units Value Units Value Units Value Units
                                                Value Units Num Type Number
1 YCENT123 1 180 TONS 106 KW
                                                             1
                                                                 PAR
2 EQ1001S 1 151 TONS
                       141
                                                             2
                                                                 PAR
Card 63----- Cooling Pumps and References -----
Cool ---CHILLED WATER---- ----CONDENSER----- ---HT REC or AUX---- Switch-
Ref Full Load Full Load Full Load Full Load Full Load Full Load over Cold
                                                      Cooling Misc.
Num Value Units Value Units Value Units Control Storage Tower Access.
1 22.8
               10.33
         KW
                       KW
        KW
 28.7
                12.0
Card 64----- Cooling Equipment Options -----
Cool Max Load
                   Free Cond Cond Cond Rej Cond Rej
Ref CW Shed
             Evap Cooling Heat Entering Min Oper To Ref To Ref @ HW
Num Reset Economizer Precool Type Source Temp Temp
                                            Type Number
                                                        Temp
```

```
Card 64------ Cooling Equipment Options ------
             Free Cond Cond Cond Rej Cond Rej
Cool Max Load
Ref CW Shed Evap Cooling Heat Entering Min Oper To Ref @ HW
Num Reset Economizer Precool Type Source Temp Temp Type Number Temp
                              85
                                   55
Card 65----- Heating Load Assignment
Load All Coil
Assignment Loads To Group 1- Group 2- Group 3- Group 4- Group 5- Group 6- Group 7- Group 8- Group 9-
Reference Heating Ref Begin End       1 1 3 6 10
Card 67------ Heating Equipment Parameters
Heat Equip Number HW Pmp
                                     Energy Seq Switch
                                                                      Demand
        Of Full Ld
                                                                     Limit
Ref
    Code
                          Cap'y
                                     Rate
                                               Order over Hot Misc.
        Units Value Units Value Units
                                     Value Units Number Control Strg Acc. Cogen Number
Number Name
1 BLR51 1 2.3 KW
                          1060 MBH
                                     1683 MBH 1
                                                     1
   BLR51 1 2.3 KW
                           1060 MBH
                                     1683 MBH
                                               2
Card 69----- Fan Equipment Parameters ------
      Cooling Heating Return Exhaust Auxiliary Room Optional
Set
Number
     Fan
                 Fan Fan Supply Exhaust Ventilation
1
      EQ4003
2
      EQ4003
      EQ4003
3
      EQ4003
5
     E04003
     EQ4003
6
     EQ4003
     EQ4003
8
     EQ4003
9
```

Card 70				Fan	Equip	ment K	W Over	rides					
MAIN SYSTEM					OTH	ER SYS	TEM	D	EMAND	LIMIT	PRIORITY		
System	Cool	Heat	Ret	Exh	Aux	Room	Opt				Room	Opt	
Set	Fan	Fan	Fan	Fan	Sup	Exh	Vent	Cool	Heat	Aux	Exh	Vent	
Number	KW	KW	KW	KW	KW	KW	KW	Fan	Fan	Fan	Fan	Fan	
1	4.9												
2	1.4												

EQ4003

10

```
Card 70----- Fan Equipment KW Overrides -----
    -----MAIN SYSTEM-----
                    --OTHER SYSTEM-- ----DEMAND LIMIT PRIORITY---
                                          Room Opt
System Cool Heat Ret Exh Aux Room Opt
Set Fan Fan Fan Sup Exh Vent Cool Heat Aux Exh Vent
Number KW KW
            KW KW
                    KW KW KW Fan Fan Fan Fan
3 8.5
    4.4
   3.7
   4.7
6
    7.8
   9.9
8
    2.0
9
10
    4.2
Card 71----- Base Utility Parameters -----
                Hourly Hourly
Base Base
                                          Equip Demand
Utility Utility
                 Demand Demand Schedule Energy Reference Limiting Entering Leaving
                 Value Units Code Type Number Number Temp
Number Descrip
                                                              Temp
1 CHW LOADS
                 45.6 TONS AVAIL
                                  CHILL-LD 1
    HW LOADS
2
                 90.9
                        MBH AVAIL HOT-LD 1
    ALL OTHER LIGHTS 7.026
                            OFICEL34 ELEC
                        KW
Card 74----- Condenser / Cooling Tower Parameters ------
  Cooling
                      Energy Energy Number Percent Low Spd Low Spd
Tower Tower Capacity Capacity Consump Consump Fluid Tower Of Airflow Energy Energy
Ref Code
         Value Units Value Units Type Type Cells Low Spd Value Units
1 EQ5100
                 4.7 KW T-WATER CTOWER 1
    EQ5100
                       4.7
                              KW T-WATER CTOWER 1
Card 75----- Miscellaneous Accessory
   #1
                          #2
                                                    #3
Misc Equip Energy Energy Sched Equip Energy Energy Sched
                                                           Energy Energy Sched
                                                    Equip
Ref Code
                           Code Value Units Code
               Units Code
                                                                Units Code
         Value
                                                    Code
                                                           Value
1 EQ5020 6.3
                KW
  EQ5020 7.1
2
                KW
----- Equipment Section Alternative #3 -----
             ECO-H, TEST CELLS 1 & 2
Card 59----- Equipment Description / TOD Schedules ------
       Elec Consump Elec Demand Demand
Alternative Time of Day Time of Day Limit
                                                            Temperature
Number Schedule
                 Schedule Max KW Alternative Description
                                                         Schedule Drift
                               NEW HW SYSTEM
```

Card 60----- Cooling Load Assignment------Load All Coil Cooling Asgn Loads To Equipment -Group 1- -Group 2- -Group 3- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-Ref Cool Ref Sizing Begin End 1 10 Card 62----- Cooling Equipment Parameters ------Cool Equip Num ------COOLING-----Demand ---Energy------Capacity-- ---Energy----Order Seq Limit Ref Code Of Num Name Units Value Units Value Units Value Units Value Units Num Type Number 1 YCENT123 1 180 TONS 106 KW 1 PAR PAR 2 EQ1001S 1 151 TONS 141 KW 2 Card 63----- Cooling Pumps and References ------. Cool ---CHILLED WATER---- ----CONDENSER----- ---HT REC or AUX---- Switch-Ref Full Load Full Load Full Load Full Load Full Load over Cold Cooling Misc. Units Value Units Control Storage Tower Access. Num Value Units Value 1 22.8 10.33 KW KW 1 2 28.7 12.0 KW KW Card 64------ Cooling Equipment Options Free Cond Cond Cond Rej Cond Rej Cool Max Load Shed Cooling Heat Entering Min Oper To Ref To Ref Evap Num Reset Economizer Precool Type Source Temp Temp Type Number 1 10 85 55 85 55 10 Card 65------All Coil Assignment Loads To -Group 1- -Group 2- -Group 3- -Group 4- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-Reference Heating Ref Begin End 1 1 3 6 10 Card 67------ Heating Equipment Parameters Seq Switch Demand Heat Equip Number HW Pmp Energy Order over Hot Misc. Limit Ref Code Of Full Ld Cap'y Rate Number Control Strg Acc. Cogen Number Units Value Units Value Units Value Units Number Name KW 720 MBH 900 MBH 1 OILBLR 1 6.3 1 BLR51 1 7.1 KW 1060 MBH 1683 2

Card 69 Fan Equipment Parameters											
System											
Set	Cooling	Heating	Return	Exhaust	Auxiliary	Room	Optional				
Number	Fan	Fan	Fan	Fan	Supply	Exhaust	Ventilation				
1	EQ4003										
2	EQ4003										
3	EQ4003										
4	EQ4003					•	:				
5	EQ4003										
6	EQ4003										
7	EQ4003										
8	EQ4003										
9	EQ4003										
10	EQ4003										

Card 70----- Fan Equipment KW Overrides ----------MAIN SYSTEM---- ----DEMAND LIMIT PRIORITY---System Cool Heat Ret Exh Aux Room Opt Room Opt Set Fan Fan Fan Sup Exh Vent Cool Heat Aux Exh Vent KW KW KW KW KW Fan Fan Fan Fan Fan Number KW 1 4.9 2 1.4 8.5 3 4.4 3.7 6 4.7 7.8 8 9.9 9 2.0 10 4.2

Card 71-	Card 71 Base Utility Parameters												
Base	Base	Hourly	Hourly			Equip	Demand						
Utility	Utility	Demand	Demand	Schedule	Energy	Reference	Limiting	Entering	Leaving				
Number	Descrip	Value	Units	Cođe	Type	Number	Number	Temp	Temp				
1	CHW LOADS	45.6	TONS	AVAIL	CHILL-LD	1							
2	HW LOADS	90.9	MBH	AVAIL	HOT-LD	-1							
3	ALL OTHER LIGHTS	7.026	KW	OFICEL34	ELEC								

Card 7	4			Condenser	/ Coolin	g Tower Pa	rameters				
	Cooling			Energy	Energy			Number	Percent	Low Spd	Low Spd
Tower	Tower	Capacity	Capacity	Consump	Consump	Fluid	Tower	Of	Airflow	Energy	Energy
Ref	Code	Value	Units	Value	Units	Туре	Type	Cells	Low Spd	Value	Units
1	EQ5100			4.7	KW	T-WATER	CTOWER	1			
2	EQ5100			4.7	KW	T-WATER	CTOWER	1			

1

By: HUITT & ZOLLARS

TRACE 600 ANALYSIS by HUITT & ZOLLARS

> EEAP ENERGY STUDY - HELSTF WHITE SANDS - ALAMOGORDO, NEW MEXICO FORT WORTH CORPS OF ENGINEERS HUITT-ZOLLARS, INC. TEST CELL # 1 AND TEST CELL # 2

EXISTING TEST CELLS 1 & 2

Weather File Code:

HOLLOMAN AFB, ALAMOGORDO N.M. Location: Latitude: 33.0 (deg) Longitude: 106.0 (deg) Time Zone: 7 4,093 (ft) Elevation: Barometric Pressure: 25.6 (in. Hg)

1.05 Summer Clearness Number: Winter Clearness Number: 1.00 Summer Design Dry Bulb: 96 (F) Summer Design Wet Bulb: 68 (F) 19 (F) Winter Design Dry Bulb: 0.20 Summer Ground Relectance: 0.20 Winter Ground Relectance:

0.0648 (Lbm/cuft) Air Density: Air Specific Heat: 0.2444 (Btu/lbm/F) Density-Specific Heat Prod: 0.9511 (8tu-min./hr/cuft/F) Latent Heat Factor: 4,186.5 (Btu-min./hr/cuft) Enthalpy Factor: 3.8908 (Lb-min./hr/cuft)

Design Simulation Period: June To November System Simulation Period: January To December

TETD/Time Averaging Cooling Load Methodology:

14:49: 8 1/ 5/96 Time/Date Program was Run: TESTCELL .TM ' Dataset Name:

G-160

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 1
EXISTING AIRSIDE EQUIPMENT

System Totals

Percent	Cool	ing Loa	d	Heatir	ng Load		Cooling	Airflow		Heating	Airflow	
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
0 - 5	4.6	0	0	-81,354	56	2,642	3,548.4	0	0	0.0	0	0
5 - 10	9.3	6	551	-162,709	36	1,708	7,096.7	0	0	0.0	0	0
10 - 15	13.9	21	1,830	-244,063	8	379	10,645.1	0	0	0.0	0	0
15 - 20	18.5	14	1,258	-325,418	0	0	14,193.4	0	0	0.0	0	0
20 - 25	23.1	9	788	-406,772	0	0	17,741.8	0	0	0.0	0	0
25 - 30	27.8	6	539	-488,127	0	0	21,290.1	0	0	0.0	0	0
30 - 35	32.4	5	395	-569,481	0	0	24,838.5	0	0	0.0	0	0
35 - 40	37.0	10	877	-650,836	0	0	28,386.8	0	0	0.0	0	0
40 - 45	41.6	6	491	-732,190	0	0	31,935.2	0	0	0.0	0	0
45 - 50	46.3	5	450	-813,545	0	0	35,483.5	0	0	0.0	0	0
	50.9	5	481	-894,900	0	0	39,031.9	0	n	0.0	0	0
50 - 55			333	-976,254	0	0	42,580.2	0	n	0.0	0	0
55 - 60	55.5	4 5	438		0	0	46,128.6	0	0	0.0	0	0
60 - 65	60.1		430 309	-1,057,608	0	0	49,676.9	0	0	0.0	0	n
65 - 70	64.8	4		-1,138,963	0	0	53,225.3	0	0	0.0	0	n
70 - 75	69.4	0	20	-1,220,317		=		0	0	0.0	0	n
75 - 80	74.0	0	0	-1,301,672	0	0	56,773.6		-		0	0
80 - 85	78.7	0	0	-1,383,026	0	0	60,322.0	0	0	0.0	_	0
85 - 90	83.3	0	0	-1,464,381	0	0	63,870.3	0	0	0.0	0	U
90 - 9 5	87.9	0	0	-1,545,735	0	0	67,418.7	0	0	0.0	0	Ü
95 - 100	92.5	0	0	-1,627,090	0	0	70,967.0	100	8,760	0.0	0	0
Hours Off	0.0	0	0	0	0	4,031	0.0	0	0	0.0	0	8,760

				E (UIPI	4 E N T	ENE	RGY	CONSI	JMPT	I O N		• • • • • • • • • • • • • • • • • • • •	
Ref	Equip -					Mon	thly Con	sumption						
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	0ct	Nov	Dec	Total
0	LIGHTS	Lightin	g Systems											
_	ELEC	40015	36142	40015	38724	40015	38724	40014	40015	38724	40015	38724	40014	471,139
	PK	53.8	53.8	53.8	53.8	53.8	53.8	53.8	53.8	53.8	53.8	53.8	53.8	53.8
1	MISC LD													
	ELEC	13610	12293	13610	13171	13610	13171	13610	13610	13171	13610	13171	13610	160,248
	PK	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	. 0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD		•											
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH20	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1		-	BAS	E UTILIT	Y									
	CHILLD	33926	30643	33926	32832	33926	32832	33926	33926	32832	33926	32832	33926	399,456
	PK	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6
2			BAS	E UTILIT	Y									
	HOTLD	676	611	676	654	676	654	676	676	654	676	654	67 6	7,963
	PK	_ 0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
3			BAS	E UTILIT	Y		•					•		
	ELEC	4832	4366	4888	4667	4860	4723	4805	4888	4667	4860	4667	4805	57,028
	PK	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
4			BAS	E UTILIT	Y									
	ELEC	11805	10662	11805	14112	11110	7392	4861	694	672	6944	11424	9027	100,509
	PK	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4

				E 0	UIPI	MENT	ENEF	RGY	CONSI	JM P T 1	1 O N			
Ref	Equip			· · · · · · · · ·		Mon	thly Con	sumption						
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Tota
1	EQ1001S		2-9	STG CENTE	RIFUGAL (CHILLER	<550 TON:	s C	hiller CH-5	1				•
	ELEC	32292	30365	35523	38281	44990	49765	54811	52701	43132	39270	32599	32552	486,28
	PK	47.7	50.4	56.3	66.0	76.7	89.3	95.3	91.3	76.7	64.9	50.4	48.6	95.
1	EQ5100	•	COOL	ING TOWE	R FANS	Tw	r. Fan CT-	51A						,
	ELEC	1648	1588	1899	2198	2798	3445	3943	3897	3348	2389	1668	1654	30,47
	PK	2.7	2.9	3.1	4.2	5.3	5.3	5.3	5.3	5.3	4.5	2.8	2.7	5.
1	EQ5100		COOL	LING TOWE	R FANS									
	WATER	162	154	182	200	238	260	279	269	225	205	165	164	2,50
	PK	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.3	0.
1	EQ5001		CHII	LLED WATE	R PUMP	- CONST.	ANT VOLUI	ME	CHW Pun	1p P-51				
	ELEC	20311	18346	20311	19656	20311	19656	20311	20311	19656	20311	19656	20311	239,14
	PK	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.
1	EQ5010	·	CON	DENSER W	ATER PUM	P-CV(HIG	H EFFIC.	, с	ND Pump	P-60			·	
	ELEC	9821	8870	9821	9504	9821	9504	9821	9821	9504	9821	9504	9821	115,63
	PK	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.
1	EQ5300		CON.	TROL PANE	EL & INT	ERLOCKS								
	ELEC	744	672	744	720	744	720	744	744	720	744	720	744	8,76
	PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.
1	EQ5013		WATI	ER CIRCU	LATING P	UMP - CO	NSTANT V	OLUME	CND F	ump P-65	i			<u> </u>
	ELEC	16591	14986	16591	16056	16591	16056	16591	16591	16056	16591	16056	16591	195,34
	PK	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.
2	EQ1001S		2-:	STG CENTI	RIFUGAL	CHILLER	<550 TON	s c	hiller CH-	52				
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	. 0.0	0.0	0.0	0.0	0.0	0.0	0.0	- 0.
2	EQ5100		COO	LING TOW	ER FANS	Tw	r. Fan CT-	51B						
-	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$\mathbf{0.\widetilde{o}}$	0.0	0.0	0.
2	EQ5100		COO	LING TOW	ER FANS									
	WATER	0	0	0	0	0	0	0	. 0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	EQ5001		CHI	LLED WAT	ER PUMP	- CONST	ANT VOLU	ME	CHW Pur	mp P-52				
_	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.

	Equip Code	Jan	Feb	Mar	Apr	Month May	ily Consi June	umption July	Aug	Sep	Oct	Nov	Dec	Total
								CN	ND Pump F	P-61				
2	EQ5010				TER PUMP-				•	0	0	0	0	0
	ELEC	0	0	0	0	0	0	0	0		0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5300		CONT	ROL PANE	L & INTER	RLOCKS								
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5013		WATE	R CIRCUL	ATING PU	MP - CON	STANT VO	LUME	CND P	ump P-66				
_	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	C
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	504007		50.0	CNITOICUC	AL - CON:	CTANT VO	LIME	Fan Al-	1-51					
1	EQ4003 ELEC	3646	3293	3646	3528	3646	3528	3646	3646	3528	3646	3 528	3646	42,924
	PK	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.
	r K	1						Fan AH	1.52					
2	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME	rallAn	-52					
	ELEC	1265	1142	1265	1224	1265	1224	1265	1265	1224	1265	1224	1265	14,89
	PK	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.
3	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME	Fan Al	H-53					,
٠	ELEC	6398	5779	6398	6192	6398	6192	6398	6398	6192	6398	6192	6398	75,33
	PK	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.
								Fan Al-	1-54					
4	EQ4003	~~~			AL - CON			3274	- 3274	3168	3274	3168	3274	38,54
	ELEC	3274	2957	3274	3168	3274	3168 4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.
	PK -	4.4	4.4	4.4	4.4	4.4		7.7	7.7	7.7				
5	EQ4003		FC (CENTR I FU	GAL - CON	STANT VO	LUME	Fan Al	1- 55					T
	ELEC	3050	2755	3050	2952	3050	2952	3050	3050	2952	3050	2952	3050	35,91
	PK	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.
,	EQ4003	,	בר ו	CHTD (FIN	GAL - CON	STANT V	NUME F	an AH-4						
0	ELEC	3646	3293	3646	3528	3646	3528	3646	3646	3528	3646	3528	3646	42,92
	PK -	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.
		+						Fan Al	4_1					
7	EQ4003	i	FC (CENTRIFU	GAL - CON									17/ 0
	ELEC	6473	5846	6473	6264	6473	6264	6473	6473	6264	6473	6264	6473	76,2
	PK	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8
Ω	EQ4003		FC :	CENTRIEU	GAL - CON	NSTANT V	OLUME	Fan Al	H-3	•				
0		7663	6922		7416	7663	7416	7663	7663	7416	7663	7416	7663	90,2
	ELEC	////	04//	7663	(410	1003	(410	1002	, 003	1710	, 003	1710	,	L ·

		•		E Q	UIPM	ENT	ENER	GY C	ONSU	MPTI	O N			
Ref	Equip					Mont	hly Cons	umption						
lum	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
9	EQ4003		FC C	ENTRI FUG	AL - CON	STANT VO	LUME	Fan AH	-2					
-	ELEC	1562	1411	1562	1512	1562	1512	1562	1562	1512	1562	1512	1562	18,396
	PK	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
10	EQ4003	•	EC C	ENTR I FUG	AI - CON	STANT VO	ILIME	Fan AH-	5	•				
10	ELEC	3050	2755	3050	2952	3050	2952	3050	3050	2 952	3050	2952	3050	35,916
	PK	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
							Boile	r B-51		· ·				
1	BLR51			FIRED HO			4070	407/	407/	407/	47/5	2078	2207	10. 77
	OIL	2632	1946	1706	1307	1119	1039	1074	1074	1074	1345	2068 3.8	4.2	18,77
	PK	4.7	4.0	3.3	2.6	1.8	1.4	1.4	1.4	1.7	2.0	3.0	4.2	4.1
1	EQ5020		HEAT	ING WATE	R CIRCUL	ATION PU	IMP	HW pump	P-70					,
	ELEC	2009	1814	2009	1944	2009	1944	2009	2009	1944	2009	1944	2009	23,65
	PK	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.
1	EQ5307		CONT	ROLS										
•	ELEC	372	336	372	360	372	360	372	372	360	372	360	372	4,380
	PK	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	T05030			TING WATE		ATTON DI	ino.	HW pump	P-63					
1	EQ5020 ELEC	4762	4301	4762	4608	4762	4608	4762	4762	4608	4762	4608	4762	56,06
	PK	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
		1												
2	BLR51		OIL	FIRED HO				r B-52						
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	-
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5020		HEAT	TING WATE	R CIRCUL	ATION P	JMP	HW pump	P-71					
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	1
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	EQ5307		CON	TROLS										
_	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0		0.0	0.0	0.0	0.0	- 0.0	0.0	0.0	0.0	0.0	0.
2	EQ5020	,	NE V.	TING WATE	ם רופרויו	ATION D	JMP -	HW pump	P-64					
۷	ELEC	0	nea 0	IING WAII	0	O O) NP 0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
	FN	0.0	0.0	0.0	0.0	0.0	0.0	٠.٠	~.0	0.0				•

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 2
EXISTING AIRSIDE EQUIPMENT

ECO-A, TEST CELLS 1 & 2

System Totals

Percent	Cool	ing Loa	d	Heatir	ng Load		Cooling	Airflow		Heating	Airflow	
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
0 - 5	4.6	0	0	-81,416	54	2,573	3,548.4	0	0	0.0	0	0
5 - 10	9.1	16	1,419	-162,832	35	1,647	7,096.7	0	0	0.0	0	0
10 - 15	13.7	18	1,601	-244,248	11	532	10,645.1	0	0	0.0	0	0
15 - 20	18.2	11	937	-325,664	0	0	14,193.4	0	0	0.0	0	0
20 - 25	22.8	8	743	-407,080	0	0	17,741.8	0	0	0.0	0	0
25 - 30	27.3	4	368	-488,496	0	0	21,290.1	0	0	0.0	0	0
30 - 35	31.9	7	588	-569,911	0	0	24,838.5	0	0	0.0	0	0
35 - 40	36.4	9	821	-651,327	0	0	28,386.8	0	0	0.0	0	0
40 - 45	41.0	5	433	-732,743	0	0	31,935.2	0	0	0.0	0	0
45 - 50	45.6	6	514	-814,159	0	0	35,483.5	0	0	0.0	0	0
50 - 55	50.1	5	415	-895,575	0	0	39,031.9	0	0	0.0	0	0
55 - 60	54.7	3	223	-976,991	0	0	42,580.2	0	0	0.0	0	0
60 - 65	59.2	5	449	-1,058,407	0	0	46,128.6	0	0	0.0	0	0
65 - 70	63.8	3	249	-1,139,823	0	0	49,676.9	0	0	0.0	0	0
70 - 75	68.3	0	0	-1,221,239	0	0	53,225.3	0	0	0.0	0	0
75 - 80	72.9	0	0	-1,302,655	0	0	56,773.6	0	0	0.0	0	0
80 - 85	77.5	0	0	-1,384,071	0	0	60,322.0	0	0	0.0	0	0
85 - 90	82.0	0	0	-1,465,487	0	0	63,870.3	0	0	0.0	0	0
90 - 95	86.6	0	0	-1,546,903	0	0	67,418.7	0	0	0.0	0	0
95 - 100	91.1	0	0	-1,628,319	0	0	70,967.0	100	8,760	0.0	0	0
Hours Off	0.0	0	0	0	0	4,008	0.0	0	0	0.0	0	8,760

				E G	UIPM	ENT	ENER	GY (ONS	JMPT!	O N		· · · · · · · · · · · · · · · · · · ·	
Ref	Equip					Mont	hly Cons	umption						
	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS	Lighting 5	Systems											
-	ELEC	32278	29154	32278	31236	32278	31236	32278	32278	31236	32278	31236	32278	380,044
	PK	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4
1	MISC LD													
	ELEC	13610	12293	13610	13171	13610	13171	13610	13610	13171	13610	13171	13610	160,248
	PK	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD			÷										_
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD									_	_	_		•
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD					_			•	•	•	0	0	0
	P HOTH20	0	0	0	0	0	0	0	0	0	0.0	0.0	0 0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD						_	_			•	•	•	0
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0 0.0	0 0.0
	PK .	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1				E UTILIT								70070	7700/	700 /5/
	CHILLD	33926	30643	33926	32832	33926	32832	33926	33926	32832	33926	32832	33926	399,456 - 45.6
	PK	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	- 45.6
2				E UTILIT									474	7.0/7
	HOTLD	676	611	676	654	676	654	676	676	654	676	654	676	7,963 0.9
	PK -	0.9	0.9	0.9	0.9	0.9	0.9	_ 0.9	0.9	0.9	0.9	0.9	0.9	0.9
3	•		BAS	E UTILIT										,,
	ELEC	3863	3489	3907	3731	3885	3775	3840	3907	3731	3885	3731	3840	45,583
	PK	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
4				E UTILIT										
	ELEC	11805	10662	11805	14112	11110	7392	4861	694	672	6944	11424	9027	100,509
	PK	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4

				£ Q	UIPI	MENT	ENER	RGY (CONSI	UMPTI	I O N	·	· • • • • • • • • • • • • • • • • • • •	
ef	Equip		- <i>-</i>			Man	thly Cons	umotion						
um	Code	Jan	Feb	Mar	Арг	May	June	July	Aug	Sep	Oct	Nov	Dec	Tot
1	EQ1001S		2-9	STG CENTR	IFUGAL (CHILLER	<550 TONS	Chill	er CH-51					
	ELEC	31361	29397	34464	37307	43942	48575	53438	51390	42057	38329	31407	31547	473,2
	PK	46.6	49.2	54.7	64.5	74.9	87.3	93.5	89.1	74.8	63.3	48.9	47.4	93
1	EQ5100		COOL	LING TOWE	R FANS	Twr. Fa	n CT-51A							
•	ELEC	1550	1491	1802	2126	2742	3423	3935	3890	3323	2324	1547	1548	29,7
	PK	2.6	2.8	3.0	4.2	5.3	5.3	5.3	5.3	5.3	4.4	2.7	2.6	5
•	EQ5100		COOL	INC TOUS	D EANS									
1	WATER	156	148	LING TOWE 176	194	. 232	253	273	263	219	199	158	157	2,4
	PK	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.2	(
								CH\	N Pump P	-51				
1	EQ5001	20744		LLED WATE			ANT VOLUM		20744	10/5/	20744	10/5/	20711	270
	ELEC PK	20311	18346 27.3	20311	19656 27.3	20311	19656 27.3	20311	20311	19656 27.3	20311	19656 27.3	20311	239,
	7.	127.3												_
1	EQ5010		CON	DENSER WA	ATER PUM	P-CV(HIG	H EFFIC.) CND	Pump P-6	0				
	ELEC	9821	8870	9821	9504	9821	9504	9821	9821	9504	9821	9504	9821	115,
	PK	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13
1	EQ5300		CON	TROL PANE	L & INT	ERLOCKS								
	ELEC	744	672	744	720	744	720	744	744	720	744	720	744	8,
	PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
1	EQ5013		WAT	ER CIRCUI	ATING P	UMP - CO	NSTANT V	OI UMF	CND Pun	np P-65				
•	ELEC	16591	14986	16591	16056	16591	16056	16591	16591	16056	16591	16056	16591	195,
	PK	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	2:
,	EQ1001S		2-	STG CENTS	T FLIGAT	CHILLER	<550 TON:	\$						
-	ELEC	0	0	0	0	0	0	0	0	0	. 0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ5100		COO	LING TOW	ED EANS									
2	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0,		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ5100			LING TOW			•	-	-		_		_	
	WATER	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ5001		CHI	LLED WAT	ER PUMP	- CONST	ANT VOLU	ME						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

				E Q	UIPM	ENT	ENER	G Y C	0 N S U	MPTI	O N			
Pof	Equip					Mont	hly Conši	umption ·						
	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
2	EQ5010		CONDI	ENSER WA	TER PUMP	-CV(HIGH	EFFIC.)							
_	ELEC	:0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5300		CONT	ROL PANE	L & INTE	RLOCKS								
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5013		WATE	R CIRCUL	ATING PU	MP - CON	STANT VO	LUME						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME F	an AH-51						
	ELEC	3646	3293	3646	3528	3646	3528	3646	3646	3528	3646	3528	3646	42,924
	PK	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
2	EQ4003		FC C	ENTR I FUG	AL - CON	STANT VO	LUME Fai	n AH-52						
	ELEC	1265	1142	1265	1224	1265	1224	1265	1265	1224	1265	1224	1265	14,892
	PK	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
3	EQ4003		FC C	ENTR I FUG	AL - CON	ISTANT VO	LUME F	an AH-53						<u></u>
_	ELEC	6398	5779	6398	6192	6398	6192	6398	6398	6192	6398	6192	6398	75,336
	PK	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
4	EQ4003		FC C	ENTRIFUG	AL - CON	ISTANT VO	DLUME F	an AH-54						
•	ELEC	3274	2957	3274	3168	3274	3168	3274	3274	3168	3274	3168	3274	38,544
	PK	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
5	EQ4003		EC C	ENTRIFUC	AL - CON	ISTANT VO	DLUME F	an AH-55						
,	ELEC	3050	2755	3050	2952	3050	2952	3050	3050	2952	3050	2952	3050	35,916
	PK	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	- 4.1
6	E04003		EC. C	ENTRIFU	GAL - CON	ISTANT VO	DLUME (Fan AH-4						
Ü	ELEC	3646	3293	3646	3528	3646	3528	3646	3646	3528	3646	3528	3646	42,924
	PK	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
. 7	E07.003		EC 1	ENTRIEU	GAL - COM	USTANT VI	OLUME -	an AH-1					- 1	
,	EQ4003 ELEC	6473	5846	6473	6264	6473	6264	6473	6473	6264	6473	6264	6473	76,212
	PK	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
_	EQ4003	1	FC /	CNTDIELL	GAL - CO	USTANT W	OLUME F	an AH-3						
٥	EU4003 ELEC	7663	6922	7663	7416	7663	7416	7663	7663	7416	7663	7416	7663	90,228
	PK	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
		1												

				E Q	UIPM	ENT	ENER	G Y C	ONSU	MPTI	O N			
Ref	Equip				 -	Mont	:hly Cons	umption		- 				
Num	Code	Jan	Feb	Mar	Арг	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	EQ4003		EC C	ENTR I FUG.	Δ! - C∩N	STANT VO	NUME F	an AH-2						
,	ELEC	1562	1411	1562	1512	1562	1512	1562	1562	1512	1562	1512	1562	18,396
	PK	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1 -	2.1
		1												
10	EQ4003		FC C	ENTR I FUG	AL - CON	STANT VO	OLUME F	an AH-5						,
	ELEC	3050	2755	3050	2952	3050	2952	3050	3050	2952	3050	2952	3050	35,916
	PK	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
	BLR51		011	FIRED HO	T DATED	BO11 ED	Boiler B-	51						
1	OIL	2732	1989	1725	1317	1123	1039	1074	1074	1077	1356	2112	2466	19,084
	PK	5.1	4.1	3.3	2.6	1.8	1.4	1.4	1.4	1.7	2.6	4.0	4.4	5.1
	• • •	1												
1	EQ5020		HEAT	ING WATE	R CIRCUL	ATION PL	JMP	V pump P-	.70					
	ELEC	2009	1814	2009	1944	2009	1944	2009	2009	1944	2009	1944	2009	23,652
	PK	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
4	EQ5307		CONT	ROLS									•	
'	ELEC	372	336	372	360	372	360	372	372	360	372	360	372	4,380
	PK	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	• • • • • • • • • • • • • • • • • • • •													
1	EQ5020		HEAT	ING WATE	R CIRCUL	ATION P	JMP HV	V pump P-	63					
	ELEC	4762	4301	4762	4608	4762	4608	4762	4762	4608	4762	4608	4762	56,064
	PK	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
2	BLR51		וזח	FIRED HO	T WATER	ROII FR								
_	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5020		HEAT	TING WATE		ATION P								
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	- 0.0
2	EQ5307		CONT	TROLS										
-	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0,0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
					•							-		
2	EQ5020		HEA'	TING WATE	R CIRCUI	LATION P	UMP -							
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 3 EXISTING AIRSIDE EQUIPMENT

------SYSTEM LOAD PROFILE------

ECO-B, TEST CELLS 1 & 2

System Totals

Percent	Cool	ing Loa	d	Heati	ng Load	;	Cooling	Airflow		Heating	Airflow	
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
0 - 5	4.6	0	0	-81,416	55	2,717	3,548.4	0	0	0.0	0	0
5 - 10	9.1	19	1,625	-162,832	30	1,499	7,096.7	0	0	0.0	0	0
10 - 15	13.7	17	1,512	-244,248	14	699	10,645.1	0	. 0	0.0	0	0
15 - 20	18.2	10	889	-325,664	0	0	14,193.4	0	0	0.0	0	0
20 - 25	22.8	8	684	-407,080	. 0	0	17,741.8	0	0	0.0	0	0
25 - 30	27.3	5	478	-488,496	0	0	21,290.1	0	0	0.0	0	0
30 - 35	31.9	6	536	-569,911	0	0	24,838.5	0	0	0.0	0	0
35 - 40	36.4	9	832	-651,327	0	0	28,386.8	0	0	0.0	0	0
40 - 45	41.0	5	403	-732,743	0	0	31,935.2	0	0	0.0	0	0
45 - 50	45.6	6	503	-814,159	0	0	35,483.5	0	0	0.0	0	0
50 - 55	50.1	5	439	-895,575	0	0	39,031.9	0	0	0.0	0	0
55 - 60	54.7	3	276	-976,991	0	0	42,580.2	0	0	0.0	0	0
60 - 65	59.2	5	437	-1,058,407	0	0	46,128.6	0	0	0.0	0	0
65 - 70	63.8	2	146	-1,139,823	0	0	49,676.9	0	0	0.0	0	0
70 - 75	68.3	0	0	-1,221,239	0	0	53,225.3	0	0	0.0	0	0
75 - 80	72.9	0	0	-1,302,655	0	0	56,773.6	0	0	0.0	0	0
80 - 85	77.5	0	0	-1,384,071	0	0	60,322.0	0	0	0.0	0	0
85 - 90	82.0	0	0	-1,465,487	0	0	63,870.3	0	0	0.0	0	0
90 - 95	86.6	0	0	-1,546,903	0	0	67,418.7	0	0	0.0	0	0
95 - 100	91.1	0	0	-1,628,319	0	0	70,967.0	100	8,760	0.0	0	0
Hours Off	0.0	0	0	0	0	3,845	0.0	0	0	0.0	0	8,760

Trane Air Conditioning Economics
By: HUITT & ZOLLARS

				E (וקוטם	MENT	ENEI	RGY (CONSI	JMPT:	I O N	- <i></i>		
Pef	Eguip					Mon	thly Com	sumntion						
Num		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS	Lighting	Systems											
•	ELEC	30290	27359	30302	29311	30296	29323	30284	30302	29311	30296	29311	30284	356,670
	PK	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4
1	MISC LD													
	ELEC	13610	12293	13610	13171	13610	13171	13610	13610	13171	13610	13171	13610	160,248
	PK	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH20	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	, 0.0	0.0	0.0	0.0	0.0	0.0
1				E UTILIT										
	CHILLD	33926	30643	33926	32832	33926	32832	33926	33926	32832	33926	32832	33926	399,456
	PK	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6
2				E UTILIT										
	HOTLD	676	611	676	654	676	654	676	676	654	676	654	676	7,963
	PK	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
3				E UTILIT			•							
	ELEC	1727	1561	1802	1660	1765	1734	1690	1802	1660	1765	1660	1690	20,516
	PK	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
4				E UTILIT										
	ELEC	11805	10662	11805	14112	11110	7392	4861	694	672	6944	11424	9027	100,509
	PK	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4

				E (וקוטנ	MENT	ENEF	RGY	CONS	UMPT	I O N					
Ref	Eguip					Mon	thly Cons	mntion								
Num		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec		To	tal
Hall	COGC	0011	100	1101	ΛÞι	nay	o di te	daty	Aug	зер	001	NOV	Dec		10	tat
1	EQ1001S		2-:	STG CENTE	RIFUGAL	CHILLER	<550 TQNS	S Chille	er CH-51							
	ELEC	31196	29224	34226	37021	43606	48189	52975	50929	41710	38037	31219	31377		469,	708
	PK	46.6	49.2	54.7	64.5	74.9	87.3	93.5	89.1	74.8	63.3	48.8	47.4			3.5
		***********				Twr. Fan	CT-51A									
1				LING TOW												
	ELEC	1532	1473	1779	2105	2725	3415	3934	3888	3308	2303	1527	1530		29,	
	PK	2.6	2.8	3.0	4.2	5.3	5.3	5.3	5.3	5.3	4.4	2.7	2.6			5.3
1	EQ5100		cool	LING TOW	ED EANS											
'	WATER	155	147	174	193	230	251	270	260	217	198	157	156		2	408
	PK	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.2	•	-	0.5
1	EQ5001		CHI	LLED WATE	ER PUMP	- CONST.	ANT VOLUM	ME CHW	/ Pump P-	51						
	ELEC	20311	18346	20311	19656	20311	19656	20311	20311	19656	20311	19656	20311		239,	148
	PK	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3		2	7.3
_								CND	Pump P-6	0						
1	EQ5010	0024					H EFFIC.)	•		0004	0501	0004		[470
	ELEC PK	9821	8870 13.2	9821 13.2	9504	9821 13.2	9504 13.2	9821 13.2	9821 13.2	9504 13.2	9821 13.2	9504 13.2	9821 13.2	-	115,	3.2
	r K	13.2	13.2	13.2		13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2			3.2
1	EQ5300		CON	TROL PANE	EL & INT	ERLOCKS										
	ELEC	744	672	744	720	744	720	744	744	720	744	720	744		8,	760
	PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0
1	EQ5013		WAT	ER CIRCUI	LATING P	UMP - CO	NSTANT VO	OLUME C	OND Pump) P-65						
	ELEC	16591	14986	16591	16056	16591	16056	16591	16591	16056	16591	16056	16591		195,	
	PK	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3		2	2.3
2	EQ1001S		2.	STC CENTS	PIENCAL	CUILLED	<550 TONS	•								
. ~	ELEC	0	0	0	0	0	טכני) 0	0	0	0	0	0	0			0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0
						***				•••	•••	•••	•••			
2	EQ5100		coo	LING TOW	ER FANS											
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0			0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0
2	EQ5100			LING TOW			_	_			_	_				
	WATER	0	0	0	0	0	0	0	0	0	0	0	0			0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0
າ	EQ5001		CUT	LLED WAT	משום פ	- CONST	ANT VOLUM	uc								
_	ELEC	0	0	CLED WAT	0	0	ANT VOLUM	me 0	0	0	0	0	0			0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0
	-															

				· E 0	UIPM	ENT	ENER	RGYC	ONSU	IMPT I	O N			
Ref	Equip					Mont	thly Cons	sumption						
	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
2	EQ5010		COND	ENSER WA	TER PUMP	-CV(HIGH	i EFFIC.))						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5300		CONT	ROL PANE	L & INTE	RLOCKS								
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	. 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5013		WATE	R CIRCUL	ATING PU	IMP - CON	ISTANT VO	DLUME						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003		FC C	ENTRI FUO	AL - CON	ISTANT VO	DLUME F	Fan AH-51						
	ELEC	3646	3293	3646	3528	3646	3528	3646	3646	3528	3646	3528	3646	42,924
	PK	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
2	EQ4003	,	FC C	ENTRI FUO	AL - CON	ISTANT VO	OLUME I	Fan AH-52	!					
	ELEC	1265	1142	1265	1224	1265	1224	1265	1265	1224	1265	1224	1265	14,892
	PK	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
3	EQ4003		FC C	ENTRIFUC	SAL - CON	ISTANT VO	DLUME F	Fan AH-53						
	ELEC	6398	5779	6398	6192	6398	6192	6398	6398	6192	6398	6192	6398	75,336
	PK	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	. 8.6	8.6	8.6	8.6
4	EQ4003		FC C	ENTRIFUC	AL - CON	ISTANT VO	DLUME F	an AH-54					·	
	ELEC	3274	2957	3274	3168	3274	3168	3274	3274	3168	3274	3168	3274	38,544
	PK	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
5	EQ4003		FC C	ENTRIFUC	AL - CON	ISTANT VO	DLUME	Fan AH-55	5					
	ELEC	3050	2755	3050	2952	3050	2952	3050	3050	2952	3050	2952	3050	35,916
	PK	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
6	EQ4003		FC C	ENTRIFUC	AL - CON	ISTANT VO	DLUME F	Fan AH-4					•	
	ELEC	3646	3293	3646	3528	3646	3528	3646	3646	3528	3646	3528	3646	42,924
	PK	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
7	EQ4003		FC C	ENTRIFUC	AL - CON	ISTANT VO	DLUME	Fan AH-1						•
	ELEC	6473	5846	6473	6264	6473	6264	6473	6473	6264	6473	6264	6473	76,212
	PK	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
8	EQ4003		FC C	ENTRIFUG	AL - CON	ISTANT VO	DLUMF	Fan AH-3						
_	ELEC	7663	6922	7663	7416	7663	7416	7663	7663	7416	7663	7416	7663	90,228
	PK	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
			·											

-				E Q	UIPM	ENT	ENER	G Y C	ONSU	MPTI	O N			
Ref	Equip					Mont	hly Cons	umption						
lum	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Tota
							F	an AH-2					•	
9	EQ4003	4572		ENTRIFUG			•	15/2	45/2	1510	15(2	1510	1540	1 10 70
	ELEC	1562	2.1	1562 2.1	1512 2.1	1562 2,1	1512 2.1	1562 2.1	1562 2.1	1512 2.1	1562 2,1	1512 2.1	2.1	18,39
	PK	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2,1	2.1	2.1	۷.
10	EQ4003		FC C	ENTR I FUG	AL - CON	STANT VO	DLUME F	an AH-5						
	ELEC	3050	2755	3050	2952	3050	2952	3050	3050	2952	3050	2952	3050	35,91
	PK	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.
1	BLR51	,	110	FIRED HO	T WATER	ROTLER	Boiler B-	51						
•	OIL	2784	2027	1752	1330	1128	1039	1074	1074	1082	1370	2153	2518	19,33
	PK	5.1	4.2	3.4	2.7	1.8	1.4	1.4	1.4	1.8	2.6	4.0	4.4	5
		1					HV	V pump P	70					
1	EQ5020			ING WATE			אר							<u> </u>
	ELEC	2009	1814	2009	1944	2009	1944	2009	2009	1944	2009	1944	2009	23,6
	PK	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2
1	EQ5307		CONT	ROLS										
	ELEC	372	336	372	360	372	360	372	372	360	372	360	372	4,3
	PK	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
1	EQ5020		HFA1	TING WATE	פ כופכווו	ATION PI	IMP HV	/ pump P-	63					
•	ELEC	4762	4301	4762	4608	4762	4608	4762	4762	4608	4762	4608	4762	56,0
	PK	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6
2	BLR51		011	FIRED HO	T LIATED	POTI ED				-				
_	OIL	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
		-												
2	EQ5020	_		TING WATE				_	_		_	_	•	
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	-
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
2	EQ5307		CON.	TROLS										
	ELEC	0	0	0	0	0	0	0	0	0	0	. 0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
2	EQ5020		HEV.	TING WATE	ם רופרו י יי	ΔΤΙΩΝ ΡΙ							•	
-	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	r 15	0.0	0.0	0.0	3.0	0.0	5.0	0.0	5.0	0.0	5.0	5.0	0.0	,

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 4
AIRSIDE EQ WITH NEW CONTROLS

------SYSTEM LOAD PROFILE -----

ECO-C, TEST CELLS 1 & 2

System Totals

Percent	Cool	ling Loa	id	Heatir	ng Load		Cooling	Airflow		Heating	Airflow	
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
۰ .	2.0	0	0	/7 077	99	2 700	7 5/0 /	^	0	0.0	0	0
0 - 5	2.8	_	-	-43,973		2,799	3,548.4	0	_		_	-
5 - 10	5.5	10	884	-87,947	1	42	7,096.7	0	0	0.0	0	0
10 - 15	8.3	28	2,466	-131,920	0	0	10,645.1	0	0	0.0	0	0
15 - 20	11.1	8	661	-175,893	0	0	14,193.4	0	0	0.0	0	0
20 - 25	13.8	4	316	-219,867	. 0	0	17,741.8	0	0	0.0	0	0
25 - 30	16.6	4	312	-263,840	0	0	21,290.1	0	0	0.0	0	0
30 - 35	19.4	. 1	127	-307,813	0	0	24,838.5	0	0	0.0	0	0
35 - 40	22.1	2	139	-351,787	0	0	28,386.8	0	0	0.0	0	0
40 - 45	24.9	1	131	-395,760	0	0	31,935.2	0	C	0.0	0	0
45 - 50	27.6	1	88	-439,733	0	0	35,483.5	0	0	0.0	0	0
50 - 55	30.4	6	527	-483,707	0	0	39,031.9	0	0	0.0	0	0
55 - 60	33.2	4	347	-527,680	0	0	42,580.2	0	0	0.0	0	0
60 - 65	35.9	13	1,132	-571,653	0	0	46,128.6	0	0	0.0	0	0
65 - 70	38.7	7	651	-615,627	0	0	49,676.9	0	0	0.0	0	0
70 - 75	41.5	9	784	-659,600	0	0	53,225.3	0	0	0.0	0	0
75 - 80	44.2	0	0	-703,573	0	0	56,773.6	0	0	0.0	0	0
80 - 85	47.0	2	175	-747,547	0	0	60,322.0	0	0	0.0	.0	0
85 - 90	49.8	0	20	-791,520	0	0	63,870.3	0	0	0.0	0	0
90 - 95	52.5	0	0	-835,493	0	0	67,418.7	0	0	0.0	0	0
95 - 100	55.3	0	0	-879,467	0	0	70,967.0	100	8,760	0.0	0	0
Hours Off	0.0	0	0	0	0	5,919	0.0	0	0	0.0	0	8,760

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 4 PRIMARY EQ WITH NEW CONTROLS

	_							. •						
Ref	Equip Code	Jan	Feb	Mar	Apr	Mont May	thly Cons June	sumption July	Aug	Sep	Oct	Nov	Dec	Total
Num	Code			Mai	Λþι	nay	June	0017	Aug	ССР	001		200	, , , , ,
0	LIGHTS	Lighting	Systems											
	ELEC	30290	27359	30302	29311	30296	29323	30284	30302	29311	30296	29311	30284	356,670
	PK	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4
1	MISC LD													
	ELEC	13610	12293	13610	13171	13610	13171	13610	13610	13171	13610	13171	13610	160,248
	PK	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD		4											
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH20	0	. 0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1		-	BAS	E UTILIT	Y									
	CHILLD	33926	30643	33926	32832	33926	32832	33926	33926	32832	33926	32832	33926	399,456
	PK	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6
2			BAS	E UTILIT	Y									
	HOTLD	676	611	676	654	676	654	676	676	654	676	654	676	7,963
	PK	_ 0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
3			BAS	E UTILIT	Y		24							
	ELEC	1727	1561	1802	1660	1765	1734	1690	1802	1660	1765	1660	1690	20,516
	PK	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7,0	7.0	7.0	7.0	7.0
1	EQ1001S		2-	STG CENT	RIFUGAL	CHILLER	<550 TON	S Chille	r CH-51					
	ELEC	26842	24579	28464	30850	36612	41381	45383	44838	36881	31884	26274	26863	400,851
	PK	37.7	38.7	49.6	56.2	63.9	71.5	76.0	74.3	66.1	56.2	38.4	38.0	76.0

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 4 PRIMARY EQ WITH NEW CONTROLS

			·	· E G	UIPI	4 E N T	ENER	RGY	CONSU	JMPT 1	O N			
Ref	Equip					Mon	thly Cons	sumption			. 			
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
1	EQ5100		COOL	ING TOWE	R FANS	Twr. Fa	n CT-51A							
·	ELEC	3114	2861	3393	3466	3851	3816	3943	3943	3816	3639	3160	3142	42,143
	PK	4.5	4.7	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.0	4.6	5.3
1	EQ5100		COOL	ING TOWE	R FANS									
	WATER	147	135	158	176	209	228	241	239	203	180	144	147	2,208
	PK	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.4
1	EQ5001		CHI	LED WATE	R PUMP	CONST	ANT VOLU	HE CHW	Pump P-5	51				
	ELEC	20311	18346	20311	19656	20311	19656	20311	20311	19656	20311	19656	20311	239,148
	PK -	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
1	EQ5010		CONI	DENSER WA	ATER PUM	P-CV(HIG	H EFFIC.	CND	Pump P-60)				
	ELEC	9821	8870	9821	9504	9821	9504	9821	9821	9504	9821	9504	9821	115,632
	PK	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
1	EQ5300		CON	TROL PANE	EL & INT	ERLOCKS								
	ELEC	744	672	744	720	744	720	744	744	720	744	720	744	8,760
	PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1	EQ5013		WATI	ER CIRCUI	LATING P	UMP - CO	NSTANT V	OLUME C	ND Pump	P-65				
	ELEC	16591	14986	16591	16056	16591	16056	16591	16591	16056	16591	16056	16591	195,348
	PK	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3
2	EQ1001S		2-:	STG CENT	RIFUGAL	CHILLER	<550 TON	S						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5100		C00	LING TOW	ER FANS									
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5100		coo	LING TOW	ER FANS									
	WATER	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK .	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	E05001		CHI	LLED WAT	ER PUMP	- CONST	ANT VOLU	ME						
	ELEC	0	0	0	0	. 0	0	0	0	0	0	0	0	. 0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5010		CON	DENSER W	ATER PUM	P-CV(HIG	H EFFIC.)						
_	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 4
PRIMARY EQ WITH NEW CONTROLS

f	Equip					Mont	hly Cons	umption						
	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Tota
2	EQ5300		CONT	ROL PANE	L & INTE	RLOCKS								
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	EQ5013		WATE	R CIRCUL	ATING PU	MP - CON	STANT VO	LUME						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	EQ4003		FC C	ENTR I FUG	AL - CON	STANT VO	LUME	Fan AH-51						}
	ELEC	3646	3293	3646	3528	3646	3528	3646	3646	3528	3646	3528	3646	42,92
	PK	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.
2	EQ4003	,	FC C	ENTR I FUG	AL - CON	STANT VO	LUME	Fan AH-52	2					
	ELEC	1265	1142	1265	1224	1265	1224	1265	1265	1224	1265	1224	1265	14,89
	PK	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.
3	EQ4003		FC C	ENTR I FUG	AL - CON	STANT VO	LUME	Fan AH-53						,
	ELEC	6398	5779	6398	6192	6398	6192	6398	6398	6192	6398	6192	6398	75,33
	PK	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8
4	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	LUME	Fan AH-54	;					,
	ELEC	3274	2957	3274	3168	3274	3168	3274	3274	3168	3274	3168	3274	38,54
	PK	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.
5	EQ4003		FC C	ENTR! FUG	AL - CON	ISTANT VO	DLUME	Fan AH-5	5					
	ELEC	3050	2755	3050	2952	3050	2952	3050	3050	2952	3050	2952	3050	35,9
	PK	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4
6	EQ4003		FC (CENTRIFUC	SAL - CON	ISTANT VO	DLUME	Fan AH-4						,
	ELEC	3646	3293	3646	3528	3646	3528	3646	3646	3528	3646	3528	3646	42,9
	PK	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4
7	EQ4003		FC (CENTRIFUC	AL - CON	ISTANT VO	OLUME	Fan AH-1						
	ELEC	6473	5846	6473	6264	6473	6264	6473	6473	6264	6473	6264	6473	76,2
_	PK	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8
8	EQ4003		FC (CENTRIFUC	GAL - CON	ISTANT V	OLUME -	Fan AH-3	3					,
_	ELEC	7663	6922	7663	7416	7663	7416	7663	7663	7416	7663	7416	7663	90,2
	PK	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10
Q	EQ4003		FC (CENTR! FU	GAL - COM	STANT V	OLUME	Fan AH-2						
•	ELEC	1562	1411	1562	1512	1562	1512	1562	1562	1512	1562	1512	1562	18,3
	PK	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 4 PRIMARY EQ WITH NEW CONTROLS

	·			E Q	UIPM	ENT	ENER	G Y C	ONSU	MPTI	O N			
lef	Equip					Mont	hly Cons	umption		-		-		
ium	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Tot
10	EQ4003		FC C	ENTR I FUG	AI - CON	STANT VO	OLUME F	an AH-5						.
10	ELEC	,3050	2755	3050	2952	3050	2952	3050	3050	2952	3050	2952	3050	35,9
	PK	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	
1	BLR51		011	FIRED HO	T WATER	BOLLER	Boiler B-	51						
'	OIL	1386	1172	1197	1093	1081	1039	1074	1074	1048	1133	1262	1355	13,9
	PK	2.2	2.0	2.0	2.0	1.7	1.4	1.4	1.4	1.7	2.0	2.0	2.1	
		1				4710V D	HV	V pump P	70					
1		2000		ING WATE			ארי 1944	2009	2009	1944	2009	1944	2009	23,0
	ELEC PK	2009	1814 2.7	2009	1944 2.7	2009	2.7	2.7	2.7	2.7	2.7	2.7	2.7	
	PK .	2.7												
1	EQ5307		CONT	ROLS										
	ELEC	372	336	372	360	372	360	372	372	360	372	360	372	4,
	PK	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1
1	EQ5020		ĤΕΑΊ	TING WATE	R CIRCUI	LATION P	UMP HV	V pump P	-63					٠
•	ELEC	4762	4301	4762	4608	4762	4608	4762	4762	4608	4762	4608	4762	56,
	PK	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	•
2	BLR51	4	011	FIRED HO	T WATER	BOLLER								
2	OIL	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ5020		UE A	TING WATI	בם כופכוו	ם ערודאו	LIMD							
۷	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
_			covi	TDOL C										
2	EQ5307	0	0	TROLS 0	0	0	0	0	0	0	0	0	0	
	ELEC PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	78	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••		•			
2	EQ5020		HEA	TING WAT	ER CIRCU	LATION P	UMP							
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 1
AIRSIDE EQ WITH NEW MOTORS

ECO-E, TEST CELLS 1 & 2

System Totals

Percent	Coo	ling Loa	d	Heati	ng Load		Cooling	Airflow		Heating	Airflow	• • • • • •
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
0 - 5	2.8	0	0	-43,973	99	2,799	3,548.4	0	0	0.0	0	0
5 - 10	5.5	10	884	-87,947	1	42	7,096.7	0	0	0.0	0	0
10 - 15	8.3	28	2,466	-131,920	0	0	10,645.1	0	0	0.0	0	0
15 - 20	11.1	8	661	-175,893	0	0	14,193.4	0	0	0.0	0	0
20 - 25	13.8	4	316	-219,867	0	0	17,741.8	0	0	0.0	0	0
25 - 3 0	16.6	4	312	-263,840	0	0	21,290.1	0	0	0.0	0	0
30 - 35	19.4	1	127	-307,813	0	0	24,838.5	0	0	0.0	0	0
35 - 40	22.1	2	139	-351,787	0	0	28,386.8	0	0	0.0	0	0
40 - 45	24.9	1	131	-395,760	0	0	31,935.2	0	0	0.0	0	0
45 - 50	27.6	1	88	-439,733	0	0	35,483.5	0	0	0.0	0	0
50 - 55	30.4	6	527	-483,707	0	0	39,031.9	0	0	0.0	0	0
55 - 60	33.2	4	347	-527,680	0	0	42,580.2	0	0	0.0	0	0
60 - 65	35.9	13	1,132	-571,653	0	0	46,128.6	0	0	0.0	0	0
65 - 70	38.7	7	651	-615,627	0	0	49,676.9	0	0	0.0	0	0
70 - 75	41.5	9	784	-659,600	0	0	53,225.3	0	0	0.0	0	0
75 - 80	44.2	0	0	-703,573	0	0	56,773.6	0	0	0.0	0	0
80 - 85	47.0	2	175	-747,547	0	0	60,322.0	0	0	0.0	0	0
85 - 90	49.8	0	20	-791,520	0	0	63,870.3	0	0	0.0	0	0
90 - 95	52.5	0	0	-835,493	0	0	67,418.7	0	0	0.0	0	0
95 - 100	55.3	0	0	-879,467	0	0	70,967.0	100	8,760	0.0	0	0
Hours Off	0.0	0	0	0	0	5.919	0.0	0	0	0.0	0	8,760

				E (UIP	MENT	ENE	RGY	ONSU	UMPT:	I O N			
_ ,								-						
Ref Num	Equip -	Jan	Feb	Mar	Apr	Mon May	thly Con: June	sumption July	Aug	Sep	Oct	Nov	Dec	Total
NGIII	Code			ina.	Vb.	nay	b anc	outy	Adg	Jep	001	NOV	000	10181
0	LIGHTS	Lighting	Systems											
	ELEC	30290	27359	30302	29311	30296	29323	30284	30302	29311	30296	29311	30284	356,670
	PK	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4
1	MISC LD													
•	ELEC	13610	12293	13610	13171	13610	13171	13610	13610	13171	13610	13171	13610	160,248
	PK	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6
2	MISC LD	•	•	•	_	•	•	•		•		•	•	•
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD												•	
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD		,											
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH20	0	0	0	0	0	0	0	0	0	0	0	0	. 0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
٥	MISC LD P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	• ••							***	•	•••				•
1				E UTILIT										
	CHILLD	33926	30643	33926	32832	33926	32832	33926	33926	32832	33926	32832	33926	399,456
	PK	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6
2			BAS	E UTILIT	Y									
	HOTLD	676	611	676	654	676	654	676	676	654	676	654	676	7,963
	PK	0.9	0.9	0.9	- 0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
3			· DAC	E UTILIT	Y		<i>.</i> -			*				
د	ELEC	1727	1561	1802	1660	1765	1734	1690	1802	1660	1765	1660	1690	20,516
	PK	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
								Chillo	r CH-51					
1	EQ1001S					CHILLER		3						<u> </u>
	ELEC	26842	24579	28464	30850	36612	41381	45383	44838	36881	31884	26274	26863	400,851
	PK	37.7	38.7	49.6	56.2	63.9	71.5	76.0	74.3	66.1	56.2	38.4	38.0	76.0

				E C	UIPI	MENT	ENER	e G Y (CONSI	JMPT:	I O N			
Ref	Equip					Mont	thly Cons	sumption						
Num	Code	Jan	Feb	Mar	Арг	May	June	July	Aug	Sep	Oct	Nov	Dec	Tota
						Twr. Far	1 CT-51A							
1	EQ5100	27/4		LING TOWE				7/07	7/07	770/	3227	2802	2786	77.77
	ELEC	2761 4.0	2537 4.2	3008	3073	3415 4.7	3384 4.7	3497 4.7	3497 4.7	3384 4.7	4.7	4.4	4.1	37,37
	PK	4.0	4.2	4.1	4.7		4.7		4.7	4.7			4.1	7.
1	EQ5100		coot	LING TOWE	R FANS									
	WATER	147	135	158	176	209	228	241	239	203	180	144	147	2,20
	PK	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.
1	EQ5001		CHI	LLED WATE	D DIIMD	- CONST	ANT VOLUM	√E CHV	√ Pump P-	-51				
'	EFEC	19939	18010	19939	19296	19939	19296	19939	19939	19296	19939	19296	19939	234,76
	PK	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.
		<u> </u>						CND	Pump P-6			·	<u></u>	
1	EQ5010						H EFFIC.	,	•		e / 70	07/0	0470	[447.00
	ELEC	9672	8736	9672	9360	9672	9360	9672	9672	9360	9672	9360	9672	113,88
	PK	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.
1	EQ5300			TROL PANÉ	EL & INT	ERLOCKS								
	ELEC	744	672	744	720	744	720	744	744	720	744	720	744	8,76
	PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.
	EQ5013		LIAT	ED CIDCIII	LATING D	IIND - CO	NSTANT V	0111ME (CND Pump	p P-65				
1	ELEC	16070	14515	16070	15552	16070	15552	16070	16070	15552	16070	15552	16070	189,21
	PK	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.
		L											<u>_</u>	
2	EQ1001S						<550 TON:							
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	_
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	EQ5100		coo	LING TOW	ER FANS									
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
,	EQ5100		rno	LING TOW	FR FANC									
۷	WATER	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	~ 0.
_	F0E004				בט טושים	cove	ANT VÕLU	ue.						
2	EQ5001 ELEC	0	CHI	LLED WAT	ER PUMP	- LONSI	ANT VOLU	ME 0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
	i is	0.0	0.0	0.0	0.0			0.0	3.0					
2	EQ5010		CON	IDENSER W	ATER PUN	IP-CV(HIG	H EFFIC.)						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.

				E U	UIPM	LENI	ENER	. G Y C	ONSU	IMPTI	O N			
ef	Equip					Mont	hly Cons	umption						
um	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
2	EQ5300		CONT	ROL PANE	L & INTE	RLOCKS								
	ELEC	0	0	0	0	0	, 0	0	0	0	0	. 0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5013		WATE	R CIRCUL	ATING PU	IMP - CON	ISTANT VO	LUME						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003		FC C	ENTR I FUG	AL - CON	ISTANT VO	LUME	Fan AH-51	1					
	ELEC	3646	3293	3646	3528	3646	3528	3646	3646	3528	3646	3528	3646	42,924
	PK	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
2	EQ4003		FC C	ENTR I FUG	AL - CON	ISTANT VO	DLUME 1	Fan AH-52	2					
	ELEC	1042	941	1042	1008	1042	1008	1042	1042	1008	1042	1008	1042	12,264
	PK	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
3	EQ4003		FC C	ENTRIFUG	AL - CON	ISTANT VO	DLUME	Fan AH-5	3					
	ELEC	6324	5712	6324	6120	6324	6120	6324	6324	6120	6324	6120	6324	74,460
	PK	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
4	EQ4003		FC C	ENTR I FUG	AL - CON	ISTANT VO	DLUME F	an AH-54	.					
	ELEC	3274	2957	3274	3168	3274	3168	3274	3274	3168	3274	3168	3274	38,54
	PK	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.
5	EQ4003		FC C	ENTR I FUG	AL - CON	ISTANT VO	DLUME	Fan AH-55	5					_
	ELEC	2753	2486	2753	2664	2753	2664	2753	2753	2664	2753	2664	2753	32,41
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.
6	EQ4003		FC C	ENTRIFUG	AL - CON	STANT VO	DLUME I	Fan AH-4					•	
	ELEC	3497	3158	3497	3384	3497	3384	3497	3497	3384	3497	3384	3497	41,17
	PK	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.
7	EQ4003	-	FC C	ENTRIFUG	AL - CON	ISTANT VO	DLUME F	an AH-1	•					
	ELEC	5803	5242	5803	5616	5803	5616	5803	5803	5616	5803	5616	5803	68,32
	PK	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	. 7.8	7.8	7.8	7.
8	EQ4003		FC C	ENTRIFUG	SAL - CON	ISTANT VO	DLUME F	an AH-3	•					
-	ELEC	7366	6653	7366	7128	7366	7128	7366	7366	7128	7366	7128	7366	86,72
	PK	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.
9	EQ4003		FC C	ENTRIFUG	AL - CON	ISTANT V	OLUME F	an AH-2						
		4400						4400		4440	4/00	4440		47.50
	ELEC	1488	1344	1488	1440	1488	1440	1488	1488	1440	1488	1440	1488 .	17,52

• • • •			******	E Q	UIPM	IENT	ENER	GY C	ONSU	MPTI	O N			
Ref	Equip					Mont	hly Cons	umption						
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Tota
10	EQ4003		FC C	ENTRIFUG	AL - CON	ISTANT VO	DLUME F	an AH-5						
	ELEC	3125	2822	3125	3024	3125	3024	3125	3125	3024	3125	3024	3125	36,79
	PK	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4,2	4.2	4.2	4.2	4.2	4.
1	BLR51		011	FIRED HO	T WATER	BOLLER	Boiler B-	51						
•	OIL	1386	1172	1197	1093	1081	1039	1074	1074	1048	1133	1262	1355	13,91
	PK	2.2	2.0	2.0	2.0	1.7	1.4	1.4	1.4	1.7	2.0	2.0	2.1	2.
	EQ5020	+	UEAT	THE HATE	R CIRCUL	ATION D	шь ну	/ pump P-	70					
1	ELEC	1711	1546	1711	1656	1711	1656	1711	1711	1656	1711	1656	1711	20,14
	PK	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.
	, ,	1												
1	EQ5307	•	CONT	ROLS										
	ELEC	372	336	372	360	372	360	372	372	360	372	360	372	4,38
	PK	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.
							HW	pump P-6	3					
1	EQ5020				R CIRCUL		JMP							F
	ELEC	4687	4234	4687	4536	4687	4536	4687	4687	4536	4687	4536	4687	55,18
	PK	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.
2	BLR51		OIL	FIRED HO	T WATER	BOILER								
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	EQ5020		HEAT	ING WATE	R CIRCUI	ATION P	JMP							
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	EQ5307		CONT	rols										
-	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	EQ5020		HFAT	TING WATE	R CIRCU	LATION P	UMP							
-	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 1 AIRSIDE EQ WITH NEW MOTORS

ECO-G, TEST CELLS 1 & 2

System Totals

Percent	Cool	ling Loa	d	Heatir	ng Load		Cooling	Airflow		Heating	Airflow	
Design	Cap.	Hours	Hours	Capacity	Hours	#our	Cap.	Hours	Hours	Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
0 - 5	2.8	0	0	-43,973	99	2,799	3,548.4	0	0	0.0	0	0
5 - 10	5.5	10	884	-87,947	1	42	7,096.7	0	0	0.0	0	0
10 - 15	8.3	28	2,466	-131,920	0	0	10,645.1	0	0	0.0	0	0
15 - 20	11.1	8	661	-175,893	0	0	14,193.4	0	0	0.0	0	0
20 - 25	13.8	4	316	-219,867	0	0	17,741.8	0	0	0.0	0	0
25 - 30	16.6	4	312	-263,840	0	0	21,290.1	0	0	0.0	0	0
30 - 35	19.4	1	127	-307,813	0	0	24,838.5	0	0	0.0	0	0
35 - 40	22.1	2	139	- 3 51,787	0	0	28,386.8	0	0	0.0	0	0
40 - 45	24.9	1	131	- 3 95,760	0	0	31,935.2	0	0	0.0	0	0
45 - 50	27.6	1	88	-439,733	0	0	35,483.5	0	0	0.0	0	0
50 - 55	30.4	6	527	-483,707	0	0	39,031.9	0	0	0.0	0	0
55 - 60	33.2	4	347	-527,680	0	0	42,580.2	0	0	0.0	0	0
60 - 65	35.9	13	1,132	-571,653	0	0	46,128.6	0	0	0.0	0	0
65 - 70	38.7	7	651	-615,627	0	0	49,676.9	0	0	0.0	0	0
70 - 75	41.5	9	784	-659,600	0	0	53,225.3	0	0	0.0	0	0
75 - 80	44.2	0	0	-703,573	0	0	56,773.6	0	0	0.0	0	0
80 - 85	47.0	2	175	-747,547	0	0	60,322.0	0	0	0.0	0.	0
85 - 90	49.8	0	20	-791,520	0	0	63,870.3	0	0	0.0	. 0	0
90 - 95	52.5	0	0	-835,493	0	0	67,418.7	0	0	0.0	0	0
95 - 100	55.3	0	0	-879,467	0	0	70,967.0	100	8,760	0.0	0	0
Hours Off	0.0	0	0	0	0	5,919	0.0	0	0	0.0	0	8,760

	•••••			E (UIPI	MENT	ENE	RGY	CONSI	UMPT	I O N			
Ref	Equip -					Mon	thly Con	sumption						
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS	Lighting	g Systems											
	ELEC	30290	27359	30302	29311	30296	29323	30284	30302	29311	30296	29311	30284	356,670
	PK	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4
1	MISC LD													
	ELEC	13610	12293	13610	13171	13610	13171	13610	13610	13171	13610	13171	13610	160,248
	PK	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH20	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1			BAS	E UTILIT	Y									
	CHILLD	33926	30643	33926	32832	33926	32832	33926	33926	32832	33926	32832	33926	399,456
	PK	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6
2			BAS	E UTILIT	Y									
	HOTLD	676	611	676	654	676	654	676	676	654	676	654	676	7,963
	PK	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
3			BAS	E UTILIT	Y									
	ELEC	1727	1561	1802	1660	1765	1734	1690	1802	1660	1765	1660	1690	20,516
	PK	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
1			YOR	K CENT.	R-123 CH	ILLER	New Chille	er CH-51						
	ELEC	29154	26644	30638	32520	36738	3 5005	35282	34655	32492	33381	28491	29173	384,173
	PK	40.7	41.6	50.9	54.5	57.8	59.0	56.3	55.1	56.3	54.0	41.3	41.0	59.0

	Equip					· Mon1	thly Cons	sumption						
m	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	To
1	EQ5100		COOL	ING TOWE	R FANS	Twr. Far	CT-51A							
	ELEC	2663	2449	2922	3018	3387	3384	3497	3497	3384	3178	2714	2690	36,
	PK	3.8	4.0	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.3	3.9	
1	EQ5100		COOL	ING TOWE	ER FANS									
	WATER	149	137	160	178	209	223	232	230	199	182	146	149	2,
	PK	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.2	0.2	(
1	EQ5001		CHII	LED WATE	ER PUMP ·	- CONST	ANT VOLUM	E CH	N Pump P	-51				
	ELEC	16963	15322	16963	16416	16963	16416	16963	16963	16416	16963	16416	16963	199,
	PK	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	2
1	EQ5011		CONI	DENSER WA	ATER PUM	P-CV(MED	IUM EFFI	N	ew CND P	ump P-66	,			
	ELEC	7686	6942	7686	7438	7686	7438	7686	7686	7438	7686	7438	7686	90,
	PK	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	1
1	EQ5300		CON	TROL PANE	EL & INTE	ERLOCKS								*
	ELEC	744	672	744	720	744	720	744	744	720	744	720	744	8,
	PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
2	EQ1001S		2-:	STG CENT	RIFUGAL (CHILLER -	<550 TON:	S						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ5100		COO	LING TOW	ER FANS									
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ5100		COO	LING TOW	ER FANS									
	WATER	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ5001		CHI	LLED WATI	ER PUMP	- CONST	ANT VOLU	ME						
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
)	EQ5010		CON	DENSER W	ATER PUM	P-CV(HIG	H EFFIC.	· >		-				
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ5300		CON	TROL PAN	EL & INT	ERLOCKS								
_	ELEC	0	0	0	0	0	0	0	0	0	0	0	ď	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

				E Q	UIPM	ENT	ENER	G Y C	ONSU	MPII	O N			
Ref	Equip					Mont	hly Cons	umption						
Num	Code	Jan	Feb	Mar	Арг	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
1	EQ4003		FC (CENTR I FUG	AL - CON	STANT VO	DLUME F	an AH-51						1
	ELEC	3646	3293	3646	3528	3646	3528	3646	3646	3528	3646	3528	3646	42,924
	PK	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
2	EQ4003		FC (CENTR I FUG	AL - CON	STANT VO) LUME	an AH-52						
	ELEC	1042	941	1042	1008	1042	1008	1042	1042	1008	1042	1008	1042	12,264
	PK	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
3	EQ4003	Ŧ	FC (CENTR I FUG	AL - CON	STANT VO	LUME F	an AH-53						
	ELEC	6324	5712	6324	6120	6324	6120	6324	6324	6120	6324	6120	6324	74,460
	PK	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
4	EQ4003		FC (CENTRIFUG	AL - CON	STANT VO	DLUME F	n AH-54						
	ELEC	3274	2957	3274	3168	3274	3168	3274	3274	3168	3274	3168	3274	38,544
	PK	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
5	EQ4003	<u> </u>	FC (CENTRIFUG	AL - CON	ISTANT VO	DLUME F	an AH-55						- ,
	ELEC	2753	2486	2753	2664	2753	2664	2753	2753	2664	2753	2664	2753	32,412
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
6	EQ4003	1	FC (CENTRIFUG	AL - CON	ISTANT VO	DLUME F	an AH-4					,	
	ELEC	3497	3158	3497	3384	3497	3384	3497	3497	3384	3497	3384	3497	41,172
	PK	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
7	EQ4003		FC (CENTRIFUG	AL - CON	ISTANT VO	DLUME Fa	an AH-1						
	ELEC	5803	5242	5803	5616	5803	5616	5803	5803	5616	5803	5616	5803	68,328
	PK	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
8	EQ4003		FC (CENTRIFUC	AL - CON	ISTANT VO	DLUME F	an AH-3						
	ELEC	7366	6653	7366	7128	7366	7128	7366	7366	7128	7366	7128	7366	86,724
	PK	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
9	EQ4003	1	FC (CENTRIFUG	AL - CON	ISTANT VO	F DLUME	an AH-2						
	ELEC	1488	1344	1488	1440	1488	1440	1488	1488	1440	1488	1440	1488	17,520
	PK	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
10	EQ4003	•	FC (CENTRIFUG	AL - CON	ISTANT VO	OLUME F	an AH-5						
	ELEC	3125	2822	3125	3024	3125	3024	3125	3125	3024	3125	3024	3125	36,792
	PK	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
1	BLR51	-, -, -, -, -, -, -, -, -, -, -, -, -, -	OIL	FIRED HO	T WATER	BOILER	Boiler B-5	51						
	OIL	1386	1172	1197	1093	1081	1039	1074	1074	1048	1133	1262	1355	13,913
	PK	2.2	2.0	2.0	2.0	1.7	1.4	1.4	1.4	1.7	2.0	2.0	2.1	2.2

Trane Air Conditioning Economics
By: HUITT & ZOLLARS

f	Equip					Mont	hly Cons	umption						
m	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Tota
								pump P-70	0					
1	EQ5020			ING WATE										1
	ELEC	1711	1546	1711	1656	1711	1656	1711	1711	1656	1711	1656	1711	20,14
	PK	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.
1	EQ5307		CONT	ROLS										
	ELEC	372	336	372	360	372	360	372	372	360	372	360	372	4,38
	PK	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
1	EQ5020		UEAT	ING WATE	ם כזפכווו	ATION DI	MD HW	pump P-6	3					
1	ELEC	4687	4234	4687	4536	4687	4536	4687	4687	4536	4687	4536	4687	55,18
	PK	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6
_	D) DE4	-1	071	FIRED HO	T LIATED	001150								
2	BLR51 OIL	0	011	LIKED HO	1 WATER	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	, 0
2	EQ5020	_		ING WATE				_	•	•	•	•	•	
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C
2	EQ5307		CONT	rols										
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C
2	EQ5020		HEAT	TING WATE	R CIRCUL	ATION PL	JMP							
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0 .	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 1 AIRSIDE EQ WITH NEW MOTORS

SYSTEM LOAD PROFILE -----

ECO-H, TEST CELLS 1 & 2

System Totals

Percent	Cool	ing Loa	d	Heatin	ng Load		Cooling	Airflow		Heating	Airflow	
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
0 - 5	2.8	0	0	-43,973	99	2,799	3,548.4	0	0	0.0	0	0
5 - 10	5.5	10	884	-87,947	1	42	7,096.7	0	0	0.0	0	0
10 - 15	8.3	28	2,466	-131,920	0	0	10,645.1	0	0	0.0	0	0
15 - 20	11.1	8	661	-175,893	0	0	14,193.4	0	0	0.0	0	0
20 - 25	13.8	4	316	-219,867	0	0	17,741.8	0	0	0.0	0	0
25 - 30	16.6	4	312	-263,840	. 0	0	21,290.1	0	0	0.0	0	0
30 - 35	19.4	1	127	-307,813	0	0	24,838.5	0	0	0.0	0	0
35 - 40	22.1	2	139	-351,787	0	0	28,386.8	0	0	0.0	0	0
40 - 45	24.9	1	131	-395,760	0	0	31,935.2	0	0	0.0	0	0
45 - 50	27.6	1	88	-439,733	0	0	35,483.5	0	0	0.0	0	0
50 - 55	30.4	6	527	-483,707	0	0	39,031.9	0	0	0.0	0	0
55 - 60	33.2	4	347	-527,680	0	0	42,580.2	0	0	0.0	0	0
60 - 65	35.9	13	1,132	-571,653	0	0	46,128.6	0	0	0.0	0	0
65 - 70	38.7	7	651	-615,627	0	0	49,676.9	0	0	0.0	0	0
70 - 75	41.5	9	784	-659,600	0	0	53,225.3	0	0	0.0	0	0
75 - 80	44.2	0	0	-703,573	0	0	56,773.6	0	0	0.0	0	0
80 - 85	47.0	2	175	-747,547	0	0	60,322.0	0	0	0.0	0	0
85 - 90	49.8	0	20	-791,520	0	0	63,870.3	0	0	0.0	0	0
90 - 95	52.5	0	0	-835,493	0	0	67,418.7	0	0	0.0	0	0
95 - 100	55.3	0	0	-879,467	0	0	70,967.0	100	8,760	0.0	0	0
Hours Off	0.0	0	0	0	0	5,919	0.0	0	0	0.0	0	8,760

				E (UIPI	HENT	ENE	R G Y	CONSI	JMPT:	I O N		• • • • • • • • •	
Ref	Equip					Mon	thly Con	sumption						
	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS	Light	ing Systen	ns	,		4							
	ELEC	30290	27359	30302	29311	30296	29323	30284	30302	29311	30296	29311	30284	356,670
	PK	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4
1	MISC LD													
	ELEC	13610	12293	13610	13171	13610	13171	13610	13610	13171	13610	13171	13610	160,248
	PK	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6
2	MISC LD													
_	GAS	0	0	. 0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD									•				
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH20	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1			BAS	E UTILITY	ſ									
	CHILLD	33926	30643	33926	32832	33926	32832	33926	33926	32832	33926	32832	33926	399,456
	PK	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6
2			BAS	E UTILIT	ť									
	HOTLD	676	611	676	654	676	654	676	676	654	676	654	676	- 7,963
	PK	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
. 3			BAS	E UTILIT	r		-							
	ELEC	1727	1561	1802	1660	1765	1734	1690	1802	1660	1765	1660	1690	20,516
	PK	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
1			YOR	K CENT. I	R-123 CH	ILLER	New Chill	er CH-51						
-	ELEC	29154	26644	30638	32520	36738	35005	35282	34655	32492	33381	28491	29173	384,173
	PK	40.7	41.6	50.9	54.5	57.8	59.0	56.3	55.1	56.3	54.0	41.3	41.0	59.0

				E C	UIPI	MENT	ENER	R G Y	CONSI	UMPT	I O N			
Ref	Equip					Mont	this Conc	umntion						
	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	San	00+	Nav	D	
					1,10.	•		•	Aug	Sep	Oct	Nov	Dec	Total
1	EQ5100		C00	LING TOWE	R FANS	Twr. Fa	n CT-51A							
	ELEC	2663	2449	2922	3018	3387	3384	3497	3497	3384	3178	2714	2690	36,782
	PK	3.8	4.0	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.3	3.9	4.7
1	EQ5100		COO	LING TOWE	P FANS									
	WATER	149	137	160	178	209	223	232	230	199	182	1//	1/0	2 407
	PK	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	146 0.2	149 0.2	2,193
						• • • •	0.4				0.5	0.2	0.2	0.4
1	EQ5001		CHI	LLED WATE	R PUMP -	CONSTA	NT VOLUM	E CHV	V Pump P	-51				
	ELEC	16963	15322	16963	16416	16963	16416	16963	16963	16416	16963	16416	16963	199,728
	PK	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8
1	EQ5011	,	COM		750 Billio			Ne	w CND PL	ımn P.66			<u></u>	
,	ELEC	7686	6942	ENSER WA 7686	7438	7686		• ,			7/0/	7.70		C
	PK	10.3	10.3	10.3	10.3	10.3	7438 10.3	7686	7686	7438	7686	7438	7686	90,491
								10.5	10.3	10.3	10.3	10.3	10.3	10.3
1	EQ5300		CONT	TROL PANE	L & INTE	RLOCKS								
	ELEC	744	672	744	720	744	720	744	744	720	744	720	744	8,760
	PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2	EQ1001S		2-5	STG CENTR	TEHIGAL C	'HILLED &	550 TONG							
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	•
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 0.0
											•••	0.0	0.0	0.0
2	EQ5100			ING TOWE										
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5100		COOL	ING TOWE	R FANS									
	WATER	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5001		CHTI	LED WATE	DIIMD -	CONSTA	NT VOLUMI	-						
_	ELEC	0	0	0	0	0	0	= 0	0	0	•	0	•	•
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 0.0	0.0	0 0.0	0.0
_														
2	EQ5010			ENSER WAT										
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
			0.0		0.0	00	~ ~	~ ~	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5300	0.0		ROL PANEL			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.0					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

				E Q	UIPM	IENT	ENEI	RGY C	0 N S U	IMPTI	O N			
Pef	Equip -					Mon!	thly Con	sumption ·		٠				
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	;: Total
					•	•		•	,	CCP	001	1101	500	10181
1	EQ4003		FC (CENTRIFUG	AL - CON	STANT VO	DLUME .	Fan AH-51		i				
	ELEC	3646	3293	3646	3528	3646	3528	3646	3646	3528	3646	3528	3646	42,924
	PK	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
2	EQ4003		50	CENTR I FUG	AL - CON	CTANT NO	N I I I I	Fan AH-52						
٤	ELEC	1042	941	1042	1008	1042	1008	1042	1042	1008	10/2	1008	10/3	12 24
	PK	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1042	1.4	1.4	12,264
		<u> </u>											1.7	1.4
3	EQ4003		FC (CENTR I FUG	AL - CON	STANT VO	DLUME I	Fan AH-53						
	ELEC	6324	5712	6324	6120	6324	6120	6324	6324	6120	6324	6120	6324	74,460
	PK	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
								Fan AH-54						
4	EQ4003 ELEC	3274	2957	CENTRIFUG			JLUME		227/	7440	707/	7440	707/	
	PK	4.4	4.4	3274	3168 4.4	327 <u>4</u>	3168	3274 4.4	3274	3168 4.4	3274 4.4	3168 4.4	4.4	38,544
	• • •	1									4.4			4.4
5	EQ4003		FC (CENTRIFUG	AL - CON	STANT VO	DLUME	Fan AH-55						
	ELEC	2753	2486	2753	2664	2753	2664	2753	2753	2664	2753	2664	2753	32,412
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
,	E01007						F	an AH-4						
6	EQ4003 ELEC	3497		CENTRIFUG			COME		7/07	770/	7/07	~~~	7407	14 472
	PK	4.7	3158 4.7	3497 4.7	3384 4.7	3497 4.7	3384	3497 4.7	3497 4.7	3384 4.7	3497 4.7	3384 4.7	4.7	41,172
		1		7.1	7.1	7.,			4.7	4.1	4.7	4.7	4.7	4.7
7	EQ4003		FC (CENTRIFUG	AL - CON	STANT VO	DLUME F	an AH-1						t
	ELEC	5803	5242	5803	5616	5803	5616	5803	5803	5616	5803	5616	5803	68,328
	PK	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
	201007						F	an AH-3						
8	EQ4003 ELEC	7366	665 3	CENTRIFUG			JLUME		77//	7400		7400		[
	PK	9.9	9.9	7366 9.9	7128	7366	7128	7366	7366	7128	7366 9.9	7128	7366	86,724
		. 1		7.7	7.7	7.7			7.9	9.9	9.9	9.9	9.9	9.9
9	EQ4003		FC (CENTRIFUG	AL - CON	STANT VO	LUME F	an AH-2						
	ELEC	1488	1344	1488	1440	1488	1440	1488	1488	1440	1488	1440	1488 -	17,520
	PK	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
					····			on AU E		 				
10	EQ4003			CENTRIFUG			COME	an AH-5						 1
	ELEC	3125	2822	3125	3024	3125	3024	3125	3125	3024	3125	3024	3125	36,792
	PK	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
1	OILBLR		וזח	FIRED HO	T WATER	ROTLEP	New Bo	iler B-51						
•	OIL	1091	923	942	860	851	818	845	845	825	892	994	1067	10,954
	PK	1.7	1.6	1.6	1.6	1.3	1.1	1.1	1.1	1.4	1.6	1.6	1.6	1.7
		1								·				• • • •

Ref						Mont	hly Cons	umption			·			
Num	Code	Jan	Feb	Mar	Арг	May	June	July	Aug	Sep	0ct	Nov	Dec	Total
1	EQ5020		HEAT	ING WATE	R CIRCUL	ATION PU	IMP HW	pump P-6	3					
	ELEC	4687	4234	4687	4536	4687	4536	4687	4687	4536	4687	4536	4687	FE 100
	PK	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	55,188
1	EQ5307		CONT	ROLS										
	ELEC	372	336	372	360	372	360	372	372	7/0	770			
	PK	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	360 0.5	372	360	372	4,380
								0.5	0.5	0.5	0.5	0.5	0.5	0.5
2	BLR51		OIL	FIRED HO	T WATER	BOILER								
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	_
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 0.0	0.0
2	EQ5020		HEAT	ING WATER	CIRCUL	ATION PU	MD.							
	ELEC	0	0	0	0	0	0	0	0	•				
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 0.0	0	0	0	0
							•••	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EQ5307		CONT	ROLS										
	ELEC	0	0	0	0	0	0	0	0	0	0	0	•	_
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 0.0	0.0

Uti...y Description Reference Table

LSTC BUILDING SCHEDULES

```
Schedules:
    AVAIL AVAILABLE (100%)
    CLGONLY COOLING ONLY (DESIGN)
    DAYSCHED COOLING FAN SCHEDULE CODE
    OFF ALWAYS OFF
    OFFICEL1 TYPICAL OFFICE SCHEDULE FOR LIGHTING
    OFFICEL2 TYPICAL OFFICE SCHEDULE 1 LIGHTING-25%
    OFFICEL6 TYPICAL OFFICE SCHEDULE 5 LIGHTING-50%
    OFFICEL7 TYPICAL OFFICE SCHEDULE 1-OCC. SEN ECO
    OFFICEL8 TYPICAL OFFICE SCHEDULE 2-OCC. SEN ECO
    OFFICEL9 TYPICAL OFFICE SCHEDULE 3-OCC. SEN ECO
    OFFICEM1 TYPICAL UPS MISCELLANEOUS EQ. SCHEDULE
    OFFICEP1 TYPICAL OFFICE SCHEDULE FOR PEOPLE
    OFICEL10 TYPICAL OFFICE SCHEDULE 4-OCC. SEN ECO
    OFICEL11 TYPICAL OFFICE SCHEDULE 5-OCC. SEN ECO
    OFICEL12 TYPICAL OFFICE SCHEDULE 6-OCC. SEN ECO
    OFICEL13 TYPICAL OFFICE SCHEDULE 6-OCC. SEN ECO
    OFICEL14 TYPICAL OFFICE SCHEDULE 7-OCC. SEN ECO
    OFICEL15 TYPICAL OFFICE SCHEDULE 8-OCC. SEN ECO
    OFICEL16 TYPICAL OFFICE SCHEDULE 9-OCC. SEN ECO
    OFICEL17 TYPICAL OFFICE SCHEDULE 100CC. SEN ECO
    OFICEL18 TYPICAL OFFICE SCHEDULE 110CC. SEN ECO
    OFICEL19 TYPICAL OFFICE SCHEDULE 120CC. SEN ECO
    OFICEL20 TYPICAL OFFICE SCHEDULE 130CC. SEN ECO
    OFICEL21 TYPICAL OFFICE SCHEDULE 140CC. SEN ECO
    OFICEL22 TYPICAL OFFICE SCHEDULE 150CC. SEN ECO
    OFICEL23 TYPICAL OFFICE SCHEDULE 160CC. SEN ECO
    OFICEL25 TYPICAL OFFICE SCHEDULE LIGHTING-80%
    OFICEL26 TYPICAL OFFICE SCHEDULE 1 LIGHTING-94%
    OFICEL27 TYPICAL OFFICE SCHEDULE LIGHTING-58%
     OFICEL28 TYPICAL OFFICE SCHEDULE LIGHTING-95%
     OFICEL29 TYPICAL OFFICE SCHEDULE LIGHTING-28%
     OPSTART OPTIMUM START COOLING FAN SCHED. CODE
     OPSTOP OPTIMUM STOP COOLING FAN SCHED. CODE
System:
     BPMZ BYPASS MULTIZONE
     COMP COMPUTER ROOM UNIT
     TRH TERMINAL REHEAT
Equipment:
     Cooling:
          EQ1010S 2-STG CTV<190 TONS W\HT REC(95 DEG HW)
     Heating:
          EQ2002 GAS FIRED STEAM BOILER
          EQ2263 ELECTRIC RESISTANCE HEAT WITH FAN
     Fan:
          EQ4003 FC CENTRIFUGAL - CONSTANT VOLUME
          EQ4223 FC FAN W\VARIABLE SPEED DRIVE
          Tower:
               EQ5100 COOLING TOWER FANS
        Misc:
           EQ5020 HEATING WATER CIRCULATION PUMP
```

Sc' le Name: AVAIL Project: AVAILABLE (100)

Location:

Client: VERSION 3.0

Program User: C.D.S. MARKETING
Comments: BUILDING TEMPLATE SERIES

Starting Month: JAN Ending Month: HTG

Starting Day Type: DSGN Ending Day Type: SUN

```
Sc' 'e Name: CLGONLY
```

Project: COOLING ONLY (DESIGN)

Location: Client: Program User:

Comments: COOLING ONLY SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent
0 100
24

Starting Month: HTG Ending Month: HTG Starting Day Type: DSGN Ending Day Type: SUN

Sc' 'e Name: DAYSCHED

Project: COOLING FAN SCHEDULE CODE

Location: Client:

Program User: HUITT ZOLLARS, INC.

Comments: FAN CODE IN MODELING OPTIMUM S

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

lour	Util Percent
0	0
6	100
17	0
24	

Sc' le Name: OFF Project: ALWAYS OFF

Location: Client: Program User: Comments:

Starting Month: JAN Ending Month: HTG

Starting Day Type: DSGN Ending Day Type: SUN

Sc' 'e Name: OFFICEL1 Project: TYPICAL OFFICE SCHEDULE FOR LIG Location: Client: Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: DSGN Hour Util Percent 0 100 24 Starting Month: JAN Ending Month: DEC Starting Day Type: WKDY Ending Day Type: WKDY Hour Util Percent ----0 0 100 7 0 16 24 Starting Month: JAN Ending Month: DEC

St. ng Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0

0

```
Sc' 'e Name: OFFICEL2
Project: TYPICAL OFFICE SCHEDULE 1 LIGHT
Location:
Client:
Program User: HUITT ZOLLARS, INC.
Comments: LIGHTING LOAD SCHEDULE
Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: DSGN
Hour Util Percent
----
  0
       100
Starting Month: JAN Ending Month: DEC
Starting Day Type: WKDY Ending Day Type: WKDY
Hour Util Percent
----
  0
        25
  7
        100
 16
         25
 24
Sterring Month: JAN Ending Month: DEC
St. .ng Day Type: SAT Ending Day Type: SUN
Hour Util Percent
  0
         25
```

Project: TYPICAL OFFICE SCHEDULE 5 LIGHT

Location: Client:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent
0 100
24

Starting Month: JAN Ending Month: DEC

Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent

0 50
7 100
16 50
24

Sterring Month: JAN Ending Month: DEC St and Day Type: SAT Ending Day Type: SUN

Pro, Lat: TYPICAL OFFICE SCHEDULE 1-OCC.

Location: Client:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent
0 100
24

Starting Month: JAN Ending Month: DEC Starting Day Type: WKDY Ending Day Type: WKDY

Hour	Util	Percent
0		81
7		100
12		81
24		

Starring Month: JAN Ending Month: DEC
St. 19 Day Type: SAT Ending Day Type: SUN

Hour	Util Percent
0	81
24	

Project: TYPICAL OFFICE SCHEDULE 2-OCC.

Location: Client:

Program User: HUITT ZOLLARS, INC.
Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent
0 100
24

Starting Month: JAN Ending Month: DEC
Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent

0 0

7 100

8 6

12 0

24

St. .ng Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Project: TYPICAL OFFICE SCHEDULE 3-OCC.

Location: Client:

Program User: HUITT ZOLLARS, INC.
Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100
24

Starting Month: JAN Ending Month: DEC
Starting Day Type: WKDY Ending Day Type: WKDY

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Sc' !e Name: OFFICEM1

Project: TYPICAL UPS MISCELLANEOUS EQ. S

Location: Client:

Program User: HUITT ZOLLARS, INC.
Comments: MISC. LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent
0 100

24

Starting Month: JAN Ending Month: DEC

Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent

0 50
24

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Ho. Jtil Percent

0 50
24

Project: TYPICAL OFFICE SCHEDULE FOR PEO

Location: Client:

Program User: HUITT ZOLLARS, INC. Comments: PEOPLE LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent
0 100
24

Starting Month: JAN Ending Month: DEC

Starting Day Type: WKDY Ending Day Type: WKDY

Hour	Util Percent
0	0
7	100
12	10
13	100
16	0
2/	

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Sc !e Name: OFICEL10 Project: TYPICAL OFFICE SCHEDULE 4-OCC. Location: Client: Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: DSGN Hour Util Percent 0 100 24 Starting Month: JAN Ending Month: DEC Starting Day Type: WKDY Ending Day Type: WKDY Hour Util Percent ----0 0 13 100 14 0 24 Str ing Month: JAN Ending Month: DEC St ng Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0

0

```
Sc' !e Name: OFICEL11
Project: TYPICAL OFFICE SCHEDULE 5-OCC.
Location:
Client:
Program User: HUITT ZOLLARS, INC.
Comments: LIGHTING LOAD SCHEDULE
Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: DSGN
Hour Util Percent
----
 0
       100
 24
Starting Month: JAN Ending Month: DEC
Starting Day Type: WKDY Ending Day Type: WKDY
Hour Util Percent
----
  0
        85
       100
  7
        85
  8
 24
Starling Month: JAN Ending Month: DEC
St og Day Type: SAT Ending Day Type: SUN
Hour Util Percent
```

0

24

Pro, ...t: TYPICAL OFFICE SCHEDULE 6-OCC.

Location: Client:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent 0 100 24

Starting Month: JAN Ending Month: DEC

Starting Day Type: WKDY Ending Day Type: WKDY

Hour	Util Percent
- <i></i>	
0	5
7	80
10	93
11	5
13	100
1′	5

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour	Util Percent
0	5
24	

Project: TYPICAL OFFICE SCHEDULE 6-OCC.

Location: Client:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent
0 100
24

Starting Month: JAN Ending Month: DEC

Starting Day Type: WKDY Ending Day Type: WKDY

Hour	Util Percent
0	0
7	10
8	100
9	0
24	

St. ng Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Project: TYPICAL OFFICE SCHEDULE 7-OCC.

Location:

Client:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100

Starting Month: JAN Ending Month: DEC Starting Day Type: WKDY Ending Day Type: WKDY

Hour	Util Percen
0	0
7	86
9	0
13	100
14	86
1/	n

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour	Util Percent
0	0
24	

Project: TYPICAL OFFICE SCHEDULE 8-OCC.

Location: Client:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100

24

Starting Month: JAN Ending Month: DEC

Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent

0 25 10 100

11 25

24

Sterring Month: JAN Ending Month: DEC

St. ig Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 25

Project: TYPICAL OFFICE SCHEDULE 9-OCC.

Location: Client:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100

24

Starting Month: JAN Ending Month: DEC

Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent

0 88

13 100

14 88

24

Str ing Month: JAN Ending Month: DEC

St. ong Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 88

Sc 'e Name: OFICEL17 Project: TYPICAL OFFICE SCHEDULE 100CC. Location: Client: Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: DSGN Hour Util Percent ----0 100 24 Starting Month: JAN Ending Month: DEC Starting Day Type: WKDY Ending Day Type: WKDY Hour Util Percent 0 40 7 94 9 86 11 40

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour	Util	Percent
0		40
24		

100 40

Project: TYPICAL OFFICE SCHEDULE 110CC.

Location:

Client:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100
24

Starting Month: JAN Ending Month: DEC

Starting Day Type: WKDY Ending Day Type: WKDY

Hour	Util Percent
0	0
7	93
8	50
10	0
13	100
1'	50
	0
24	

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour	Util Percent
0	0
24	-

Sc' le Name: OFICEL19

Project: TYPICAL OFFICE SCHEDULE 120CC.

Location: Client:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent
0 100

24

Starting Month: JAN Ending Month: DEC Starting Day Type: WKDY Ending Day Type: WKDY

Hour	Util Percent
0	47
7	92
11	100
12	47
13	92
11	47

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour	Util Percent
0	6
24	

Sc' le Name: OFICEL20

Project: TYPICAL OFFICE SCHEDULE 130CC.

Location:

Client:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100

24

Starting Month: JAN Ending Month: DEC Starting Day Type: WKDY Ending Day Type: WKDY

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent
---0 77
24

```
Sc 'e Name: OFICEL21
```

Project: TYPICAL OFFICE SCHEDULE 140CC.

Location:

Client:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100

24

2′

Starting Month: JAN Ending Month: DEC

Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent

0 0
11 96
12 75
15 100
16 0

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 0
24

Sc le Name: OFICEL22
Project: TYPICAL OFFICE SCHEDULE 15OCC.
Location:
Client:
Program User: HUITT ZOLLARS, INC.
Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100
24

Starting Month: JAN Ending Month: DEC Starting Day Type: WKDY Ending Day Type: WKDY

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent
0 23
24

```
Sc' !e Name: OFICEL23

Pro, Let: TYPICAL OFFICE SCHEDULE 160CC.
Location:
Client:
Program User: HUITT ZOLLARS, INC.
```

Program User: HUITT ZOLLARS, INC.
Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100
24

Starting Month: JAN Ending Month: DEC Starting Day Type: WKDY Ending Day Type: WKDY

Hour	Util Percen
0	4
8	100
12	4
13	100
16	4
2/	

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour	Util	Percent
0		4
24		

```
Sc' le Name: OFICEL25
Project: TYPICAL OFFICE SCHEDULE LIGHTIN
Location:
Client:
Program User: HUITT ZOLLARS, INC.
Comments: LIGHTING LOAD SCHEDULE
Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: DSGN
Hour Util Percent
----
  0
      100
 24
Starting Month: JAN Ending Month: DEC
Starting Day Type: WKDY Ending Day Type: WKDY
Hour Util Percent
----
  0
         80
  7
       100
 16
         80
 24
Sterring Month: JAN Ending Month: DEC
St. and Day Type: SAT Ending Day Type: SUN
Hour Util Percent
```

24

```
Sc' le Name: OFICEL26
 Project: TYPICAL OFFICE SCHEDULE 1 LIGHT
Location:
Client:
Program User: HUITT ZOLLARS, INC.
Comments: LIGHTING LOAD SCHEDULE
Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: DSGN
Hour Util Percent
----
  0
      100
  24
Starting Month: JAN Ending Month: DEC
Starting Day Type: WKDY Ending Day Type: WKDY
Hour Util Percent
----
  0
         94
  7
        100
 16
         94
 24
Starring Month: JAN Ending Month: DEC
St. .ng Day Type: SAT Ending Day Type: SUN
Hour Util Percent
```

24

```
Sc' le Name: OFICEL27
Project: TYPICAL OFFICE SCHEDULE LIGHTIN
Location:
Client:
Program User: HUITT ZOLLARS, INC.
Comments: LIGHTING LOAD SCHEDULE
Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: DSGN
Hour Util Percent
  0
      100
 24
Starting Month: JAN Ending Month: DEC
Starting Day Type: WKDY Ending Day Type: WKDY
Hour Util Percent
----
  0
         58
  7
        100
 16
        58
Starring Month: JAN Ending Month: DEC
St. ng Day Type: SAT Ending Day Type: SUN
Hour Util Percent
----
 0
```

Starting Month: JAN Ending Month: DEC Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent

0 95
7 100
16 95
24

24

Starring Month: JAN Ending Month: DEC St. 19 Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 95
24

```
Sc le Name: OFICEL29
Project: TYPICAL OFFICE SCHEDULE LIGHTIN
Location:
Client:
Program User: HUITT ZOLLARS, INC.
Comments: LIGHTING LOAD SCHEDULE
Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: DSGN
Hour Util Percent
----
  0
       100
 24
Starting Month: JAN Ending Month: DEC
Starting Day Type: WKDY Ending Day Type: WKDY
Hour Util Percent
  0
        28
  7
        100
 16
       28
 24
Starting Month: JAN Ending Month: DEC
Hour Util Percent
----
```

24

Sc' 'e Name: OPSTART

Pro, Lat: OPTIMUM START COOLING FAN SCHED

Location: Client:

Program User: HUITT ZOLLARS, INC.

Comments: DETERMINE AMOUNT OF TIME TO CY

Reset utilization percent to : 0

whenever any of the following conditions are true.

Sensor				Optional	Offset
Type	0p	Value	Type/Units	Value	Units
RMDB	>	0	CSTAT	5	DEG-F
RMDB	<	0	HSTAT	-5	DEG-F
RMRH	>	0	DSRMRH	10	PERCENT

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percent
0	0
6	100
7	0
2'	

Sc !e Name: OPSTOP

Project: OPTIMUM STOP COOLING FAN SCHED.

Location: Client:

Program User: HUITT ZOLLARS, INC.

Comments: DETERMINE AMOUNT OF TIME TO CY

Reset utilization percent to : 0

whenever any of the following conditions are true.

Sensor				Optional	Offset
Type	0p	Value	Type/Units	Value	Units
RMDB	>	0	CSTAT	5	DEG-F
RMDB	<	0	HSTAT	-5	DEG-F
RMRH	>	0	DSRMRH	10	PERCENT

Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

our	Util Percent
0	0
16	100
17	0
2.	

Utility Description Reference Table

```
Schedules:
     AVAIL AVAILABLE (100%)
     CLGONLY COOLING ONLY (DESIGN)
     DAYSCHED COOLING FAN SCHEDULE CODE
     OFF ALWAYS OFF
     OFFICEL1 TYPICAL OFFICE SCHEDULE FOR LIGHTING
     OFFICEL2 TYPICAL OFFICE SCHEDULE 1 LIGHTING-25%
     OFFICEL7 TYPICAL OFFICE SCHEDULE 1-OCC. SEN ECO
     OFFICEL8 TYPICAL OFFICE SCHEDULE 2-OCC. SEN ECO
     OFFICEL9 TYPICAL OFFICE SCHEDULE 3-OCC. SEN ECO
     OFFICEM1 TYPICAL UPS MISCELLANEOUS EQ. SCHEDULE
     OFFICEP1 TYPICAL OFFICE SCHEDULE FOR PEOPLE
     OFICEL10 TYPICAL OFFICE SCHEDULE 4-OCC. SEN ECO
     OFICEL11 TYPICAL OFFICE SCHEDULE 5-OCC. SEN ECO
     OFICEL12 TYPICAL OFFICE SCHEDULE 6-OCC. SEN ECO
     OFICEL13 TYPICAL OFFICE SCHEDULE 6-OCC. SEN ECO
     OFICEL14 TYPICAL OFFICE SCHEDULE 7-OCC. SEN ECO
     OFICEL15 TYPICAL OFFICE SCHEDULE 8-OCC. SEN ECO
     OFICEL16 TYPICAL OFFICE SCHEDULE 9-OCC. SEN ECO
     OFICEL17 TYPICAL OFFICE SCHEDULE 100CC. SEN ECO
     OFICEL18 TYPICAL OFFICE SCHEDULE 110CC. SEN ECO
     OFICEL19 TYPICAL OFFICE SCHEDULE 120CC. SEN ECO
     OFICEL20 TYPICAL OFFICE SCHEDULE 130CC. SEN ECO
    OFICEL21 TYPICAL OFFICE SCHEDULE 140CC. SEN ECO
    OFICEL22 TYPICAL OFFICE SCHEDULE 150CC. SEN ECO
    OFICEL23 TYPICAL OFFICE SCHEDULE 160CC. SEN ECO
    OPSTART OPTIMUM START COOLING FAN SCHED. CODE
    OPSTOP OPTIMUM STOP COOLING FAN SCHED. CODE
System:
    BPMZ BYPASS MULTIZONE
    COMP COMPUTER ROOM UNIT
    VRH VARIABLE VOLUME REHEAT
Equipment:
    Cooling:
         EQ1010S 2-STG CTV<190 TONS W\HT REC(95 DEG HW)
         YCENT123 YORK CENT. R-123 CHILLER
         YWCRECIP YORK W.C. RECIP. CHILL.
    Heating:
         EQ2002 GAS FIRED STEAM BOILER
         EQ2263 ELECTRIC RESISTANCE HEAT WITH FAN
         OILBLR OIL FIRED HOT WATER BOILER
    Fan:
         EQ4003 FC CENTRIFUGAL - CONSTANT VOLUME
         EQ4223 FC FAN W\VARIABLE SPEED DRIVE
         Tower:
              EQ5100 COOLING TOWER FANS
       Misc:
          EQ5020 HEATING WATER CIRCULATION PUMP
```

CONTENTS OF : C:\CDS\TULTRA\CLG\YWCRECIP.CLG

- 1 JOB 1
- 2 01/YORK W.C. RECIP. CHILL.
- 3 O1/RECIPOCATING CHILLER WATER COOLED
- 4 01/YORK MODEL YCWZ CHILLER
- 5 01/HUITT ZOLLARS, INC.
- 6 01/
- 7 02/YORK WAT. COOLED RECIP MOD. YCWZ CHILLER/RECIP///TONS/.848/KW-TON
- 8 03/EQ5001///EQ5011
- 9 04////EQ5300
- 10 05/0/NO/NO/NONE//85/65////44//ELEC
- 11 06/7/15/PERCENT/100/82/67/48/46/30/15
- 12 07/PERCENT/100/80.4/66.9/47.0/40.7/26.2/14.3
- 13 08/H2OCOOL/PCTHTSNK/0/0
- 14 09/8/17
- 15 10/YES
- 16 12/NONE

CONTENTS OF : C:\CDS\TULTRA\CLG\YCENT123.CLG

- 1 JOB 1
- 2 01/YORK CENT. R-123 CHILLER
- 3 O1/CENTRIFUGAL CHILLER
- 4 01/1 STAGE 330 TON YORK MODEL YT
- 5 01/HUITT-ZOLLARS, INC.
- 6 01/NEW R-123 CHILLER
- 7 02/1-STAGE 330 TON YORK MODEL YK/CENTRIF///TONS/.59/KW-TON
- 8 03/EQ5001///EQ5011
- 9 04////EQ5300
- 10 05/0/NO/NO/NONE//85/65////44//ELEC
- 11 06/10/10/PERCENT/100/90/80/70/60/50/40/30/20/10
- 12 07/PERCENT/100/90/80/72/64/56/49/41/33/24
- 13 08/H2OCOOL/PCTHTSNK/10.8/21.1
- 14 09/10/20
- 15 10/YES
- 16 12/NONE

CONTENTS OF : C:\CDS\TULTRA\HTG\OILBLR.HTG

- 1 JOB 1
- 2 O1/OIL FIRED HOT WATER BOILER
- 3 01/OIL FIRED HOT WATER BOILER
- 4 01/EXISTING BOILERS
- 5 01/HUITT-ZOLLARS, INC.
- 6 01/
- 7 02/HOT H20 BOILER, OIL/OIL//EQ5020///MBH/83.3/PCTEFF
- 8 03////EQ5307
- 9 04/2/0/CURVE/0/1.0

Utility Description Reference Table

TC-1 & TC-2 BUILDINGS SCHEDULES

```
Schedules:
    AVAIL AVAILABLE (100%)
    CLGONLY COOLING ONLY (DESIGN)
    ESH53 HELSTF ENERGY STUDY WHITE SANDS
    OFF ALWAYS OFF
    OFFICEM1 TYPICAL UPS MISCELLANEOUS EQ. SCHEDULE
    OFFICEP1 TYPICAL OFFICE SCHEDULE FOR PEOPLE
    OFICEL24 TYPICAL OFFICE SCHD LIGHTING 58%
    OFICEL30 TYPICAL OFFICE SCHEDULE LIGHTING-92%
    OFICEL31 TYPICAL OFFICE SCHEDULE LIGHTING-98%
    OFICEL32 TYPICAL OFFICE SCHEDULE LIGHTING-83%
    OFICEL33 TYPICAL OFFICE SCHEDULE LIGHTING-80%
    OFICEL34 TYPICAL OFFICE SCHEDULE LIGHTING-59%
     OFICEL35 TYPICAL OFFICE SCHEDULE LIGHTING-3 HR
     TRH TERMINAL REHEAT
     VTCV VARIABLE TEMP CONSTANT VOL
         EQ1001S 2-STG CENTRIFUGAL CHILLER <550 TONS
         BLR51 OIL FIRED HOT WATER BOILER
     Fan:
          EQ4003 FC CENTRIFUGAL - CONSTANT VOLUME
              EQ5100 COOLING TOWER FANS
        Misc:
          EQ5013 WATER CIRCULATING PUMP - CONSTANT VOLUME
```

EQ5020 HEATING WATER CIRCULATION PUMP

Schedule Name: AVAIL
Project: AVAILABLE (100)

Location:

Client: VERSION 3.0

Program User: C.D.S. MARKETING
Comments: BUILDING TEMPLATE SERIES

Starting Month: JAN Ending Month: HTG

Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 100

Schedule Name: CLGONLY

Project: COOLING ONLY (DESIGN)

Location:

Client:

Program User:

Comments: COOLING ONLY SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

••••

0 100

24

Starting Month: HTG Ending Month: HTG

Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 0

```
Sc' .e Name: ESH53
Project: HELSTF ENERGY STUDY WHITE SANDS
Location: ALAMOGORDO, N.M.
Client: CORP OF ENGINEERS - FORT WORTH,
Program User: HUITT ZOLLARS, INC.
Comments: ELECTRIC HUMIDIFIER SCHEDULE
Starting Month: JAN Ending Month: MAR
Starting Day Type: DSGN Ending Day Type: SUN
Hour Util Percent
----
  0
      100
 17
         0
 24
Starting Month: APR Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN
Hour Util Percent
      100
  0
 21
        0
 24
Str ing Month: MAY Ending Month: MAY
Sti ng Day Type: DSGN Ending Day Type: SUN
Hour Util Percent
       100
  0
         0
  16
  24
Starting Month: JUN Ending Month: JUN
Starting Day Type: DSGN Ending Day Type: SUN
Hour Util Percent
----
      100
 11
  24
Starting Month: JUL Ending Month: JUL
Starting Day Type: DSGN Ending Day Type: SUN
Hour Util Percent
       100
   0
         0
   7
  24
Starting Month: AUG Ending Month: SEP
Starting Day Type: DSGN Ending Day Type: SUN
```

Hour Util Percent

Schedule Name: OFF Project: ALWAYS OFF

Location: Client:

Program User: Comments:

Starting Month: JAN Ending Month: HTG
Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent
--- 0 0
24

Schedule Name: OFFICEM1 Project: TYPICAL UPS MISCELLANEOUS EQ. S Location: Client: Program User: HUITT ZOLLARS, INC. Comments: MISC. LOAD SCHEDULE Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: DSGN Hour Util Percent ----100 0 24 Starting Month: JAN Ending Month: DEC Starting Day Type: WKDY Ending Day Type: WKDY Hour Util Percent 0 50 24 Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 50
24

```
Schedule Name: OFFICEP1
```

Project: TYPICAL OFFICE SCHEDULE FOR PEO

Location:

Program User: HUITT ZOLLARS, INC.
Comments: PEOPLE LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Hour Util Percent

0 100

24

Starting Month: JAN Ending Month: DEC
Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent

0 0

7 100

12 10 13 100

16 0

24

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 0

Sc e Name: OFICEL24

Project: TYPICAL OFFICE SCHD LIGHTING 58

Location: Client:

Program User: HUITT ZOLLARS, INC.
Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100

24

Starting Month: JAN Ending Month: DEC

Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent

0 65

7 100

16 65

24

Str 'ng Month: JAN Ending Month: DEC

St. ng Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 65

Project: TYPICAL OFFICE SCHEDULE LIGHTIN

Location:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100

24

Starting Month: JAN Ending Month: DEC

Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent

0 92

7 100 9 92

24

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 92

```
Schedule Name: OFICEL31
```

Project: TYPICAL OFFICE SCHEDULE LIGHTIN

Client:

Program User: HUITT ZOLLARS, INC.
Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100

24

Starting Month: JAN Ending Month: DEC

Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent

0 98

10 100

11 98

24

Starting Month: JAN Ending Month: DEC

Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

--- -----

0 98

Project: TYPICAL OFFICE SCHEDULE LIGHTIN

Location: Client:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100

24

Starting Month: JAN Ending Month: DEC

Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent

0 93

9 100

1 83

24

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 83

Project: TYPICAL OFFICE SCHEDULE LIGHTIN

Location: Client:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100

24

Starting Month: JAN Ending Month: DEC
Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent

0 80

9 100

11 80

24

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

--- ------

Project: TYPICAL OFFICE SCHEDULE LIGHTIN

Location: Client:

Program User: HUITT ZOLLARS, INC.
Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100

24

Starting Month: JAN Ending Month: DEC
Starting Day Type: WKDY Ending Day Type: WKDY

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 18
24

Project: TYPICAL OFFICE SCHEDULE LIGHTIN

Location: Client:

Program User: HUITT ZOLLARS, INC. Comments: LIGHTING LOAD SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: DSGN

Hour Util Percent

0 100

24

Starting Month: JAN Ending Month: DEC

Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent

----0 0

100

0 10

24

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 0

Utility Description Reference Table

Schedules:

AVAIL AVAILABLE (100%)

CLGONLY COOLING ONLY (DESIGN)

OFF ALWAYS OFF

OFFICEM1 TYPICAL UPS MISCELLANEOUS EQ. SCHEDULE

OFFICEP1 TYPICAL OFFICE SCHEDULE FOR PEOPLE

OFICEL30 TYPICAL OFFICE SCHEDULE LIGHTING-92%

OFICEL31 TYPICAL OFFICE SCHEDULE LIGHTING-98%

OFICEL32 TYPICAL OFFICE SCHEDULE LIGHTING-83%

OFICEL33 TYPICAL OFFICE SCHEDULE LIGHTING-80%

OFICEL34 TYPICAL OFFICE SCHEDULE LIGHTING-59%

OFICEL35 TYPICAL OFFICE SCHEDULE LIGHTING-3 HR

System:

TRH TERMINAL REHEAT

VTCV VARIABLE TEMP CONSTANT VOL

Equipment:

Cooling:

EQ1001S 2-STG CENTRIFUGAL CHILLER <550 TONS

YCENT123 YORK CENT. R-123 CHILLER

Heating:

BLR51 OIL FIRED HOT WATER BOILER

OILBLR OIL FIRED HOT WATER BOILER

Fan:

EQ4003 FC CENTRIFUGAL - CONSTANT VOLUME

Tower:

EQ5100 COOLING TOWER FANS

Misc:

EQ5013 WATER CIRCULATING PUMP - CONSTANT VOLUME

EQ5020 HEATING WATER CIRCULATION PUMP

CONTENTS OF : C:\CDS\TULTRA\CLG\YCENT123.CLG

- 1 JOB 1
- 2 01/YORK CENT. R-123 CHILLER
- 3 O1/CENTRIFUGAL CHILLER
- 4 01/1 STAGE 330 TON YORK MODEL YT
- 5 01/HUITT-ZOLLARS, INC.
- 6 01/NEW R-123 CHILLER
- 7 02/1-STAGE 330 TON YORK MODEL YK/CENTRIF///TONS/.59/KW-TON
- 8 03/EQ5001///EQ5011
- 9 04////EQ5300
- 10 05/0/NO/NO/NONE//85/65////44//ELEC
- 11 06/10/10/PERCENT/100/90/80/70/60/50/40/30/20/10
- 12 07/PERCENT/100/90/80/72/64/56/49/41/33/24
- 13 08/H2OCOOL/PCTHTSNK/10.8/21.1
- 14 09/10/20
- 15 10/YES
- 16 12/NONE

CONTENTS OF : C:\CDS\TULTRA\HTG\BLR51.HTG

- 1 JOB 1
- 2 01/OIL FIRED HOT WATER BOILER
- 3 01/OIL FIRED HOT WATER BOILER
- 4 01/EXISTING BOILERS
- 5 01/HUITT-ZOLLARS, INC.
- 6 01/
- 7 02/HOT H2O BOILER, OIL/OIL//EQ5020///MBH/83.3/PCTEFF
- 8 03////EQ5307
- 9 04/2/0/CURVE/0/1.0

CONTENTS OF : C:\CDS\TULTRA\HTG\OILBLR.HTG

- 1 JOB 1
- 2 01/OIL FIRED HOT WATER BOILER
- 3 O1/OIL FIRED HOT WATER BOILER
- 4 01/EXISTING BOILERS
- 5 01/HUITT-ZOLLARS, INC.
- 6 01/
- 7 02/HOT H2O BOILER, OIL/OIL//EQ5020///MBH/83.3/PCTEFF
- 8 03////EQ5307
- 9 04/2/0/CURVE/0/1.0